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THE GENUS MELIOLA IN PORTO RICO

Including Descriptions of Sixty-two New Species and Varieties and a Synopsis of all Known Porto Rican Forms.

WITH FIVE PLATES

BY

FRANK LINCOLN STEVENS

Contribution from the
Botanical Laboratories of the University of Illinois

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THE GENUS MELIOLA IN PORTO RICO

The genus Meliola while not the largest or the most important genus of parasitic fungi in Porto Rico possesses features of special interest. As at present understood from the monograph of Gaillard, it constitutes a well defined, clearly marked genus with a fairly large number of species. In the Sylloge Fungorum of Saccardo 234 species and varieties are included; 63 additional species have since been described, making 297 species and varieties recognized prior to the present paper. The fungi are especially beautiful in contour, superficial with small penetrating haustoria. Usually their effect upon the host is slight though in some instances well marked pathological effects are discernible. They are among the most common genera of leaf inhabiting fungi in Porto Rico, and may be found in all parts of the island in great abundance, usually, though not always, causing conspicuous black blotches upon one or both surfaces of the leaf, more rarely upon stems.

The present study is based almost entirely upon collections made by the writer during the years 1912, 1913, and 1915. Cognizance is taken also of the collections of Heller reported by Earle. Nearly every species noted by earlier writers is included in my own collections and is usually reported upon several hosts and from numerous localities.

A narrative of the two collecting trips which furnished those specimens is given in the Journal of the New York Botanical Garden, June 1916.

A reference to the time involved has been made by Arthur.[1]

The specimens, types, cotypes, etc. of this collection have been deposited as indicated by Miss E. Young.[2] Other articles based on these collections have been published by P. Garman,[3] E. Young,[4] J. C. Arthur.[5]

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[1]Mycologia 7:168, 1915, and 8:20, 1916.
[2]Mycologia 7:143, 1915.
[3]Mycologia 7:333, 1915.
[4]Mycologia 8:42, 1916.
[5]Mycologia 7:168, 227, 315, 1915; 8:16, 1916.

The following summary will serve to give a general idea of the scope of the present report:

Total number of collections of Meliola	729
Number of species of Meliola	95
" " varieties of Meliola	6
" " new species of Meliola	56
" " new varieties of Meliola	6
" " species and varieties of Meliola new to Porto Rico	83
" " species and varieties of Meliola previously reported from Porto Rico	20
" " hosts	171
" " " previously reported	25
" " " new to Porto Rico for Meliola	146
" " host families	53
" " " " previously reported	18
" " " " new to Porto Rico for Meliola	35

In grouping the genus into sections and in keying the species I have in the main followed the plan adopted by Gaillard, laying principal emphasis upon the setae, perithecial and mycelial, next upon the character of the setal tips, and basing final specific distinction upon more minute characters of mycelium, capitate hyphopodia, spore, etc. It is to be noted that in Porto Rico occur none of the species with clavate, long, 8-spored asci. All are of the short-ascus form with two to four spores per ascus. In certain species there is constancy as regards each character, in other species there is large variation. Young colonies may be devoid of mycelial setae though they may be abundant in old colonies *(M. earlii)*. Certain species sometimes though not always present perithecial setae *(M. solani)*. Several species show large variation as to setal tips, the tips being sometimes simple and acute, sometimes slightly forked, *(M. mangiferae, M. ipomoeae)*, even much forked, and all arising from the same mycelium; or the forking may show a great range in character and complexity *(M. furcata)*. In other species the setal tips may show great constancy, e.g., *M. cucurbitacearum*. Taken all in all the problem of specific limitation is much the same as is met in the Erysiphaceae, with very similar characters to use.

The problem of classification is rendered especially difficult by the fact that the Meliolas are very often overgrown by parasites which confuse the picture and also often prevent the formation of perithecia, and, I believe, strongly influence the character of the mycelium and hyphopodia, i.e., the mycelium and hyphopodia are often made more crooked and more angular, or to appear so, by the parasite that is growing upon them. I believe also that the character of the mycelium is strongly

influenced by the nature of the leaf upon which it grows, that it will be more nearly straight on a straight-veined, smooth leaf than upon a crooked-veined, hairy one.

The question of limits of variation in mycelium, hyphopodia and setae is a difficult one and finally will be solved only by inoculation experiments and observations upon live material.

I have left out of all consideration the so-called conidial stage, Helminthosporium, Podosporium, etc., because these structures appear useless in taxonomy and, moreover, because I am far from convinced that they really are conidial stages of the Meliolas. The mucronate hyphopodia are curious structures but they are so variable on the same mycelium that they possess little value in classification.

The question of biologic specialization has been but little studied in this genus. My field observation, however, strongly supports the idea that there is large specialization. For example, Cissus vines heavily coated with *M. merrillii* are found with their branches interlacing with plants susceptible to Meliola but the Cissus Meliola does not invade the other plants. The Meliolas on Dieffenbachia and Philodendron, members of the same family, to the naked eye appear much alike and under the microscope are kin, yet there is no field evidence that one goes to the other's host. In some cases forms morphologically indistinguishable are found upon large numbers of species or genera in the same family (notably *M. bicornis* on the Leguminosae), whether these forms are interinoculable or not is not known.

It is possible that were type specimens of all the old species at hand for comparison some of the new species might be found to agree with them, but from the descriptions and figures available such does not seem to be the case. It is more probable that some of the collections which I have referred to old species, relying upon printed descriptions and without comparison with types, in reality may be new species. It seems best for present purposes, however, to avoid undue multiplication of species and I believe that my error lies more largely in conservatism than in the creation of new species.

It is extremely difficult to interpret many of the descriptions that have been written, some are too brief and leave out many essentials, others describe setae but do not state whether they are perithecial or mycelial and the supposition is strong that there have been many cases where the colony character has been taken from a colony parasitized by some other fungus, e.g., many of the Meliolas described as having a crustose colony are probably Meliolas parasitized by a Microthyriaceous fungus.

The final word as to the specific relation cannot be said but with the large number of collections at my disposal, on many hosts, and the

opportunity thus afforded of making close comparisons between these forms, I feel that I have at least approximated the truth.

Especially worthy of note is the occurrence in Porto Rico of several tropical species on closely related hosts, originally described from the other side of the world, notably *M. merrillii,* on Sicyos from the Philippines, *M. clavulata* on Ipomoea and *M. cyperi* on Sedges from Africa.

It should be remembered that Meliola is preeminently a tropical genus, almost exclusively so, the occurrence therefore of these species in Porto Rico, Africa and the Philippines with no present tropical land connection between these countries implies, either that the Meliolas have in the past been of different climatic range or that they are the residual flora of previously connected tropical lands.

I wish to acknowledge the very great assistance that I have received from Doctor N. L. Britton and Mr. Percy Wilson in the determination of Phanerogamic hosts, from Miss Slosson, the Pteridophytes, and from Mrs. Agnes Chase the Grasses.

Meliola, Key to Sections

Spores 3-septate, mycelial setae none	section A, p. 10
Spores 4-septate	
Mycelial setae none	
Perithecium with no setae or appendages	section B, p. 12
Perithecium with setae or with appendages	section C, p. 20
Mycelial setae present	
Perithecium with setae or appendages	section D, p. 32
Perithecium with no setae or appendages	
Mycelial setae simple, straight	section E, p. 34
Mycelial setae simple, uncinate	section F, p. 52
Mycelial setae usually simple, sometimes forked	section G, p. 54
Mycelial setae forked	section H, p. 57

Section A

Spores 3-septate, mycelial setae none

The members of this section are clearly marked by the 3-septate spores, a character that seems to be invariable, and the three species found in Porto Rico are clearly limited as is shown in the following key.

Key to Species of Section A

Perithecium with larvaeform appendages	M. puiggarii	No. 1
Perithecium with no larvaeform appendages		
Perithecial setae absent	M. manca	No. 2
Perithecial setae present,	M. guignardi	No. 3

There is quite a striking similarity between the hyphopodia upon the three species with 3-septate spores. They are of the same general size and contour, large and irregular.

1. M. PUIGGARII Speg.

Fungi Puiggariani. No. 228.
On *Rubus* sp. Fig. 1.[1]

El Alto de la Bandera, July 15, '15, *8650*, July 14, '15, *8270*. Maricao, July 20, '15, *8892*.

No other species has been reported upon the Rosaceae. The form agrees well with the descriptions and with a type specimen, No. 2722, received from Dr. Spegazzini, though the perithecial appendages are nearly twice as long as stated. See also under *M. manca*.

2. MELIOLA MANCA Ell. and Mart.

Amer. Nat. 17: 1284, 1883, and Jour. Myc. 1: 148, 1885.
On *Myrica cerifera* L. Fig. 2.

Manati, Nov. 23, '13, *5289*, Nov. 25, '13, *5250*. A collection by Heller near Cataño, Jan. 17, '03.

In "Le Genre Meliola", Gaillard unites under *M. manca* the three species *M. manca, M. sanguinea,* and *M. puiggarii,* giving a new description for *M. manca.* This new description mentions larvaeform, perithecial appendages. The original description of *M. manca* by Ellis and Martin mentions no such appendages, but does specifically state that there are no perithecial appendages. My own material of two collections is ample. I have studied it carefully, also a specimen of the Heller collection and a specimen collected by Martin and distributed by Ellis as N.A.F. No. 1292, all of these upon the same host. These specimens all agree perfectly and agree with the original description. They do not have larvaeform perithecial appendages and therefore do not conform with the description as given by Gaillard.

The specimens of Meliola which I have found on Rubus agree well with the description of *M. puiggarii.* They have abundant larvaeform appendages and cannot be placed under *M. manca.* Moreover, both the general characters of the mycelium and of the capitate hyphopodia separate the forms on Rubus from those of Myrcia, the hyphopodia on Rubus being much larger and more irregular in shape. I am forced therefore, to regard the description given by Gaillard for *M. manca* as

[1]Figures accompanying this article are noted in connection with the host from which they were made.

erroneous and that of Ellis and Martin as correct and to recognize *M. puiggarii* on Rubus, as an entirely different species.

In the head cell of each capitate hyphopodium there is a small, clear spot, about 3μ in diameter, which appears to be a hole in the lower side of the hyphopodium, and if so probably indicates the breaking off of a haustorium. Similar marks are found upon the capitate hyphopodia in many species but they are not usually so conspicuous as in this species.

3. M. GUIGNARDI Gaill.

Bull. Soc. Myc. de France 8: 176, 1892.

On *Turpinia panniculata* Vent. Fig. 3.

Maricao, July 19, '15, *8922*, Sept. 20, '13, *3685*.

This differs somewhat from the type as described by Gaillard in its smaller perithecia, about 300μ, shorter perithecial setae, about 100-150μ, and smaller ascospores, 54 x 15μ.

It is of special interest since it is the only species known which has a 3-septate spore, without mycelial setae, and with perithecial setae. The hyphopodia are very characteristic and agree well with the figures of Gaillard. The type of the species was from Ecuador on host unknown.

SECTION B

Spores 4-septate, no setae or appendages

This section corresponds to the Section I C. a. of Gaillard without the forms with perithecial appendages. As represented in Porto Rico it presents many puzzling aspects, occurring on a large number of hosts of many families and presenting variations which though easy to recognize are difficult to define with accuracy. The spores in all are quite uniform and neither in size, shape nor constriction lend themselves to description. There are no perithecial or mycelial setae. Therefore the perithecium, the mycelium and hyphopodia must furnish the distinctions. Moreover, such variations as do occur in the perithecium are minor and difficult to state definitely. For this reason many students have referred such forms on numerous hosts to *M. glabra*. A study of the Porto Rican material both in the field and under the microscope convinces me that many of these forms which may agree in spores and perithecia and which show variation in general habit in mycelium and hyphopodia are really distinct species. Plants heavily infected with one of these forms of Meliola may be found growing among plants susceptible to another form, but which are entirely devoid of Meliola.

In the treatment of the Porto Rican species I have removed from *M. glabra* all which it seems very evident are not co-specific with the

specimen No. 3849 of Rabenhorst's Fungi Europaei. I have described some Meliolas as varieties though I am inclined to believe that in several instances they will eventually prove to be really as distinct specifically as many other forms that are recognized as species.

Key to Species of Section B

Mycelium very dense, close woven	
Spore cells about equal in size	
Head cell oval or slightly angular	M. glabra No. 4
Head cell angular to lobed	M. sepulta No. 5
Spore cells unequal	M. irregularis No. 6
Mycelium not close woven	
Capitate hyphopodia mostly opposite	M. solani No. 7
Capitate hyphopodia not opposite	
Mycelium more or less crooked	
Mycelium wavy	
Capitate hyphopodia oval	M. hyptidicola No. 8
Capitate hyphopodia globular	
Perithecia very rough	M. cyclopoda No. 9
Perithecia not very rough	M. aibonitensis No. 10
Mycelium very crooked	
Capitate hyphopodia angular	M. perseae No. 11
Mycelium usually straight or nearly so	
Capitate hyphopodia entire	
Oval, small, 17 x 7μ	M. laguncularіae No. 12
Elliptical, large, 21 x 10μ	M. longipoda No. 13
Pyriform	M. melastomacearum No. 14
Capitate hyphopodia entire or lobed	M. glabroides No. 15
Capitate hyphopodia lobed	M. triloba No. 16

4. Meliola glabra Berk. and Curt.

Cuban Fungi N. 883 *(pro parte)*.
Gaillard, Le Genre Meliola: 59: 1892.

On *Hypelate trifoliata* Sw.

Mona Island, collected by Britton, Cowles and Hess, Feb. 1914.

Two other specimens were also sent to me by Dr. Britton from the Bronx Herbarium, one from the Bahamas, No. 8246, one from Cuba, No. 2171, collected in 1860-1864.

On *Drypetes* sps.

Rio Tanama, July 6, '15, *7885*.

This specimen shows an unusually rough, irregular mycelium and capitate hyphopodia.

If we accept for *M. glabra* the description given by Gaillard and as belonging to it the specimen distributed by Rabenhorst and Winter as No. 3849, Fungi Europaei (See Fig. 4) on *Barbacenia purpurea* we must think of this as a form with a dense, closely matted mycelium with mycelial threads coursing more or less parallel. This is typically the condition of the Meliola on Hypelate.

4a. Meliola glabra var. psychotriae var. nov.

There is a remarkable variation here in that many of the colonies are very small, of rapidly branching, closely matted mycelium, while others are of looser structure and larger in area.

The small, closely matted colonies approach quite closely to the type while the loose colonies deviate from it widely.

On *Palicourea domingensis* (Jacq.) DC.

Florida Adentro, July 1, '15, *7649* (type).

On *Psychotria bertiana* P.

El Alto de la Bandera, July 15, '15, *8673*, *8654*, *8278*, *8710*, *8566*, *8646*. El Gigante, July 17, '15, *8528*.

On *Psychotria pubescens* Sw.

Arecibo - Lares Road, June 21, '15, *7281*. Vega Baja, July 2, '15, *7732*, July 2, '15, *7741*. Dos Bocas, below Utuado, July 8, '15, *8032*.

On *Psychotria grandis* Sw.

Mayaguez, June 25, '15, *7487*.

On *Psychotria* sp. Quebradillas, Nov. 22, '13, *5032*.

Vega Baja, Mch. 1, '13, *516*.

On *Palicourea* ?

Mayaguez, May 1, '13, *1070* b. Jan. 30, '13, *316*. Vega Baja, Feb. 20, '13, *468*. Dos Bocas, below Utuado, Dec. 30, '13, *6650*. El Gigante, Dec. 15, '13, *5944*. Ponce, Nov. 8, '13, *4367*. Maricao, July 20, '15, *8875*.

On *Coccocypselum repens* Sw.

Maricao, July 20, '15, *8961*.

5. Meliola sepulta Pat. in herb.

On *Avicennia nitida* Jacq. Fig. 5.

Two specimens were collected by Heller, Nos. *390*, Jan. 31, '89, *6416*, Jan. 17, 1903; both of these in the Bronx Garden bear the above name, but description has not yet been published. The following description is made from a fragment of specimen No. 390 which becomes the type:

Colonies circular, 1-7 mm. in diam., black, dense, mostly hypophyllous, mycelium closely branched, producing a closely woven mat. Capi-

tate hyphopodia 24 x 14μ, opposite or alternate, head cell angular or often distinctly lobed, stalk cell 10μ long. Mycelial and perithecial setae none. Perithecia abundant in older portions of the colony, 170μ in diam., slightly rough. Asci evanescent, short, thick, 2-4 spored. Spores, 52 x 20μ, strongly constricted, ends obtuse.

6. Meliola irregularis sp. nov.

Colonies amphigenous, irregular, 1-3 mm. in diam., black. Mycelium forming a very close network of threads which branch irregularly, 7μ in diameter. Hyphae often so close as to lie in contact forming a mat.

Capitate hyphopodia alternate or irregular, crowded, head cell pyriform, somewhat irregular, 17 x 10μ, the basal cell 3-7μ long, Mucronate hyphopodia alternate or opposite, bottle-shaped, narrow, 20μ long. Mycelial setae none. Perithecial setae none.

Perithecia 200μ, rough with conic protuberances about 17μ high. Asci 2-spored, soon evanescent; ascospores 4-septate, brown, constricted, obtuse, 41 x 14μ, often irregular in shape, one end pointed, one or more cells larger than the others, or with septa set obliquely, occasionally with an aberrant number of septa.

On *Hygrophila brasiliensis,* (Spreng.) Lind. Fig. 6.

Rio Piedras, Aug. 11, '15, *9283* (type).

This species in character of perithecium resembles *M. glabra* but in spores and mycelium it is quite different.

7. Meliola solani sp. nov.

Colonies amphigenous, irregularly circular, 2-4 mm. in diam. Mycelium black, forming a close network, 7μ in diameter, branches irregular.

Capitate hypophodia small, mostly opposite, not crowded, 2 per cell, cells about 17μ long, head cell pyriform or globular, 10 x 8μ, the basal cell short. Mucronate hyphopodia few, alternate or opposite, bottle-shaped, 14 x 7μ. Mycelial setae none. Perithecial setae few or wanting, straight or slightly curved, 125 x 7μ, tip obtuse, dark.

Perithecia 150-180μ. Asci soon evanescent; ascospores 4-septate, brown, very slightly constricted, obtuse, 37 x 14μ.

On *Solanum jamaicense* Mill. Fig. 7.

Monte de Oro, Dec. 3, '13, *5750* (type).

The chief, distinguishing character is the small, nearly globular capitate hyphopodia which are usually opposite.

8. MELIOLA HYPTIDICOLA sp. nov.

Colonies amphigenous, chiefly hypophyllous, irregular, diffuse. Mycelium black, forming a loose network, 7μ in diameter, branches irregular.

Capitate hypophodia small, alternate or irregular, not crowded, 1 per cell, cells about 20μ long, head cell ovoid, 14-17 x 9μ, the basal cell 3-6μ long. Mucronate hyphopodia few, bottle-shaped. Perithecial setae none. Mycelial setae none.

Perithecia 100-140μ, slightly rough. Asci soon evanescent; ascospores 4-septate, brown, very slightly constricted, obtuse, 31-34 x 10-13μ.

On *Hyptis lantanifolia* Poit.

Las Marias, July 10, '15, *8130* (type).

On *Hyptis capitate* Jacq. Fig. 8.

El Gigante, July 16, '15, *8526*.

On *Hyptis pectinata* (L.) Poit.

Dos Bocas, below Utuado, July 7, '15, *7981*. Maricao, July 19, '15, *8791*.

On *Hyptis* sps.

Monte de Oro, Dec. 13, '13, *5760*.

9. MELIOLA CYCLOPODA sp. nov.

Colonies epiphyllous, circular, 1-5 mm. in diam. Mycelium black, forming a loose network, 7μ in diameter, branches mostly opposite.

Capitate hyphopodia small, alternate, not crowded, 1 per cell, cells 20 to 35μ long, head cell nearly globular, 14 x 14μ, the basal cell 3-7μ long. Mucronate hyphopodia opposite, bottle-shaped, 10-18 x 6μ. Perithecial setae none. Mycelial setae none.

Perithecia 135-170μ in diam., rough with conic protuberances. Asci soon evanescent; ascospores 4-septate, brown, slightly constricted, obtuse, 38 x 14μ.

On *Pseudelephantopus spicatus* Juss. Fig. 9.

Vega Baja, July 2, '15, *7733* (type), *7871*.

10. MELIOLA AIBONITENSIS sp. nov.

Colonies amphigenous, black, circular to irregular, 1-3 mm. in diam. Mycelium rather closely woven, crooked, waving, branching irregular.

Capitate hyphopodia alternate or unilateral, rather close together, often 17μ, head cell nearly globular, 10-15μ in diam., stalk cell short. Mucronate hyphopodia scattered, bottle-shaped to conic. Mycelial and perithecial setae none.

Perithecia flattened when young and somewhat so when mature,

surrounded by an areola of radiating mycelium, slightly rough, 140μ in diam., spores 4-septate, 41 x 17μ, obtuse, slightly constricted.

On unknown dicotyledonous host, Aibonito, July 16, '15, *8470*.

11. Meliola perseae sp. nov.

Colonies hypophyllous, irregular, black, 2-5 mm. in diam. Mycelium very crooked, branching irregularly, opposite, alternate or dichotomous, very dark, 9μ thick.

Capitate hyphopodia alternate or irregular, head cell oval to pyriform, cuneiform or angular. Mucronate hyphopodia alternate, variable. Mycelial setae none. Perithecial setae none.

Perithecium 100-200μ in diam., black, very rough with large conical projections. Asci evanescent. Spores 4-septate, strongly constricted, dark brown, ends rounded, 44 x 24μ.

On *Persea gratissima* Gaertn. Fig. 10.

Las Marias, July 10, '15, *8212* (type).

Characterized chiefly by absence of setae and its very irregular mycelium; near to *M. calva* but differing from it in its rough perithecium.

12. Meliola lagunculariae Earle

Muhlenbergia 1: 11, 1901.

On *Laguncularia racemosa* (L.) Gaertn.

Mayaguez, June 27, '15, *7505*, April 20, '13, *1364*. Martin Peña, Aug. 11, '15, *9331*. Joyuda, 331, '13, *363*.

The type was collected by Heller on the same host Jan. 1900, No. *4361*a. Another collection was made by Heller at Cataño, Jan. 7, '03, No. *6417*.

13. Meliola longipoda Gaill.

Bull. Soc. Myc. de. Fr. 8: 172, 1892.

On *Cordia* sp.

Mayaguez Mesa, June 25, '15, *7472*.

On *Cordia nitida* Vahl. Fig. 11.

Martin Peña, Aug. 11, '15, *9329*.

The hyphopodia in these specimens seem quite variable. In No. *7472*, they are long, especially long in the stalk cell. The capitate hyphopodia do not agree precisely with the figures of Gaillard. They are more commonly obtuse or even truncated; nor are they quite as long as is called for in Gaillard's description. Still, in view of the evident variability of these structures in this species, it seems best to regard my collections as *M. longipoda*.

On *Tournefortia hirsutissima* L.

Rio Arecibo, K. 64.7, July 8, '15, *7780*. Dos Bocas, below Utuado, July 7, '15, *7965*. Quebradillas, Nov. 22, '13, *5001*.

These specimens agree closely with the descriptions and drawings of Gaillard.

On *Anona montana* Macf.

Mayaguez, June 29, '15, *7561*.

14. Meliola melastomacearum Speg.

Fung. Puigg., N. 232.

On *Clidemia hirta* (L.) D. Don. Fig. 12.

Maricao, July 20, '15, *8956*. Mayaguez, June 24, '15, *7394*. Las Marias, July 10, '15, *8123*. Dos Bocas, below Utuado, July 8, '15, *8089*, Aug. '15, *9479*.

On *Clidemia strigillosa* (Sw.) P. DC.

Trujillo Alto, Aug. 15, '15, *9423*. Lajas, June 17, '15, *7159*.

On *Miconia laevigata* (L.) P. DC.

Dos Bocas, below Utuado, July 8, '15, *8085*. Rio Arecibo, K. 64.7, July 8, '15, *7797*. El Alto de la Bandera, July 15, '15, *8662*.

On *Miconia racemosa* (Aubl.) P. DC.

Mayaguez, June 24, '15, *7414*, *7399*, *7389*, June 16, '15, *7636*, June 14, '15, *7037*. Lajas, June 17, '15, *7145*.

The colonies of this fungus are very inconspicuous, so much so that in probably no case was the collection made for the Meliola; that is, in nearly every case the leaves were collected for other fungi upon them, chiefly Microthyriaceae, and it was only when the specimen came under the compound microscope that the presence of the Meliola was recognized. Indeed after it is known that the Meliola is present it is often very difficult to locate the colonies amid the large numbers of other fungi which are usually found upon these hosts. The fungus agrees fully with authentic specimens received from Dr. Spegazzini.

15. Meliola glabroides sp. nov.

Colonies amphigenous, mostly epiphyllous, irregular, circular, 1-8 mm. in diam. Mycelium black, forming a loose network, 7μ in diameter, branches mostly opposite, often at right angles.

Capitate hyphopodia alternate, not crowded, 1 per cell, cells about 30μ long, head cell ovoid, entire or angular, 17 x 14μ, the basal cell 7μ long. Mucronate hyphopodia few, alternate or opposite, bottle-shaped, 16-18 x 6μ. Perithecial setae none. Mycelial setae none.

Perithecia 100-140μ, rough with rounded protuberances. Asci soon evanescent; ascospores 4-septate, brown, very slightly constricted, obtuse, 41 x 17μ.

On *Piper adunctum*, L. Fig. 13.

Indiera Fria, Maricao, Oct. 8, '13, *3371* (type). El Alto de la Bandera, July 15, '15, *9039*, *8633*. Las Marias, July 10, '15, *9603*, *8133*. Dos Bocas, below Utuado, July 8, '15, *8064*. Vega Baja, July 2, '15, *7724*. Mayaguez Mesa, June 29, '15, *7563*. Añasco, Oct. 12, '13, *3582*. Maricao, Sept. 20, '13, *3647*, Nov. 8, '13, *4802*. Arecibo-Lares road, June 21, '15, *7297*. Aibonito, July 16, '15, *8471*. Lares, Nov. 22, '13, *4930*. Martin Peña, Aug. 11, '15, *9334*. Trujillo Alto, Aug. 16, '15, *9472*. Utuado, Nov. 8, '13, *4393*.

A specimen in the Bronx Gardens, Number 4359 a. on *Piper adunctum* was collected at Mayaguez, P. R., Jan. 23, 1900, and determined as *M. glabra*. Of the various species of Meliola found on Piper it can be readily distinguished by the absence of setae and by the prominent roughening of the perithecium. The species is very common on its widespread host. No injury to the leaves is apparent.

On *Nectandra patens* (Sw.) Griseb.

Mayaguez Mesa, June 25, '15, *7466*, June 15, '15, *7081*, June 29, '15, *7595*. Maricao, Sept. 20, '13, *4852*, July 20, *8873*, *8874*, *8867*, July 19, '15, *8750*, July 20, '15, *8973*.

On *Simarubra tulae* Urb.

Mayaguez Mesa, June 29, '15, *7588*. Mayaguez, June 15, '15, *7061*. El Gigante, near Adjuntas, July 16, '15, *8516*.

On *Sauvagesia erecta* L.

El Alto de la Bandera, July 15, '15, *8641*. Las Marias, July 10, '15, *8129*. Maricao, July 19, '15, *8944*, *8777*.

A specimen determined by Earle as *M. glabra* is in the Bronx Gardens. The form on this host uniformly shows shorter, more nearly globular capitate hyphopodia than are found in the type.

On *Stachytarpheta cayennensis* (L. Cl. Rich) Vahl.

Trujillo Alto, Aug. 15, '15, *9405*. Sabana Llana, Aug. 13, '15, *9380*.

I would add here also specimen No. 6402, Pueblo Viejo, of Heller, Jan. 13, 1903, which is in the Bronx collection under the name *M. cookeana*, an evident error of determination. This form, like the last, also has short head cells. Its mycelium is also less straight than in other specimens of this species.

On *Solanum rugosum* Dunal.

Las Marias, July 10, '15, *8121*.

On *Solanum persicifolium* Dunal.

Quebradillas, Nov. 22, '13, *5019*.

This has short hyphopodia, similar to those of the two last mentioned.

15a. MELIOLA GLABROIDES, var. SCHLEGELIAE var. nov.

This differs from the type in its more angular capitate hyphopodia and a some what closer colony structure.

On *Schlegelia sps.*

El Alto de la Bandera, July 14, '15, *8289* (type), *8274.*

16. MELIOLA TRILOBA Wint.

Hedw. 25: 95, 1886.

On *Pilea parietaria* (L.) Bl. Fig. 14.

Arecibo-Lares Road, June 21, '15, *7232.* Dos Bocas, below Utuado, July 8, '15, *1038.* Rio Arecibo, K. 64.7, July 8, '15, *7804.*

Also reported by Earle as No. 558 of Heller's collection, 1899. This and *M. earlii* are often associated upon the same leaves but the present species is usually epiphyllous.

SECTION C.

Spores 4-septate, no mycelial setae, perithecia with setae or appendages.[1]

KEY TO SPECIES OF SECTION C

Appendages larvaeform	
Capitate hyphopodia distant, 27μ	
Head cell angular or entire	
Appendages long	M. compositarum No. 17
" short	M. tuberculata No. 18
Head cell very irregular	M. calophylli No. 19.
Capitate hyphopodia close, 17μ	M. arecibensis No. 20
Appendages setiform	
Mycelium very scant, (Distance between mycelial threads more than ten times the thickness of the threads)	
Head cells not usually globular	M. miconieicola No. 21
Head cells mostly globular	M. tenuissima No. 22
Mycelium not very scant	
Capitate hyphopodia crowded	M. parathesicola No. 23
Capitate hyphopodia not crowded	
Tips of setae much curved	
Tips often hooked, uncinate	
Mycelium wavy	M. toruloidea No. 24
Mycelium nearly straight	M. comocladiae No. 25
Tips often coiled or spiral	M. tortuosa No. 26

[1] *M. solani,* see p. 15, might sometimes fall within this section.

Tips of setae slightly curved or not at all
  Setae very thin, 4μ — M. chamaecristicola No. 27
  Setae thicker
    Branches quite uniformly at right angles
      Head cell not angular — M. rectangularis No. 28
      Head cell angular — M. chicoccae No. 29.
    Branches not at right angles
      Main mycelial threads running parallel — M. pteridicola No. 30
      Main mycelial threads not parallel
        Setae thick, 10μ, heavy walled — M. molleriana No. 31
        Not as above
          Setae long, 125μ
            Spores 37 x 14μ — M. cupaniae No. 32
            Spores 50 x 14μ — M. ocoteae No. 33
          Setae not so long
            Colony very dense, threads agglutinated — M. compacta No. 34
            Colony dense, threads not agglutinated — M. miconiae No. 35
            Colony not dense
              Head cell nearly globular — M. triumfettae No. 36
              Head cell not globular — M. maricaensis No. 37

17. Meliola compositarum Earle

Bull. N. Y. Bot. Gard. 3: 306, 1905.

On *Eupatorium odoratum* L. Fig. 15

Dos Bocas, below Utuado, July 8, '15, *7977*, *8055*, Dec. 16, '13, *6056*, *6001*, Dec. 30, '13, *6574*. El Gigante, July 10, '15, *8537*. Arecibo-Lares Road, June 6, 21, '15, *7309*. El Miradero, Aug. 4, '15, *9168*. Florida Adentro, July 1, '15, *7689*. Las Marias, July 10, '15, *8155*. Rio Tanama, July 6, '15, *7825*. Maricao, July 19, '15, *8798*. Aibonito, July 16, '15, *8466*. Rosario, Nov. 27, '13, *3771*. Utuado, Nov. 8, '13, *4683*. Mayaguez, Oct. 31, '13, *3898*. Yauco, Oct. 3, '13, *3241*. Cataño, Nov. 6, '13, *4185*. Jajome Alto, Dec. 3, '13, *5756*.

Also collected by Heller, No. 141, Rio Piedras, and No. 6185 on the same host, Adjuntas; and on Willoughbaea. These all agree with Earle's cotype No. 6185. In some instances, especially in No. 5756, there is some variation in habit and the appendages are considerably larger than mentioned in the description.

17a. Meliola compositarum Earle var. portoricensis var. nov.

This form agrees with the type in perithecial characters but its mycelium is much more coarse, also its appendages are larger and more irregular.

On *Eupatorium portoricense* Urb. Fig. 16.

Vega Baja, Nov. 5, '13, *4301* (type). Dos Bocas, below Utuado, Dec. 30, '13, *6861, 6034, 6031, 6866, 6830, 6557*, Dec. 16, '13, *6003, 6032, 6031*, July 8, '15, *7953, 8102*. San Sebastian, Nov. 22, '13, *5192*. Vega Baja, July 2, '15, *7723*. Arecibo-Lares Road, June 20, '15, *7320*.

On *Eupatorium dolicholepis* Urb.

Rio Tanama, July 6, '15, *7893*.

On all hosts it is usually much overgrown with one or more parasites.

18. Meliola tuberculata sp. nov.

Colonies amphigenous, more common above, densely black, 1-3 mm. in diam., circular. Mycelium rather dense, quite crooked.

Capitate hyphopodia alternate, varying from simple and ovate to irregularly lobed, usually 30μ or more apart. Mucronate hyphopodia few, narrowly conic. Mycelial setae none. Perithecial setae none. Perithecial appendages conic, 51 x 27μ, very numerous, nearly every surface cell of the perithecium being prolonged into an appendage.

Perithecia 160μ in diam. Asci evanescent. Spores 4-septate, 38 x 14μ obtuse, slightly constricted.

On unknown dicotyledonous plant, Vega Baja, July 2, '15, No. *7742*, (type).

This species is clearly distinct from all other Porto Rican species studied, especially in the appendages to the perithecium, the crooked mycelium, and the variable hyphopodia.

19. Meliola calophylli sp. nov.

Colonies mainly epiphyllous, irregular, diffuse, 1-10 mm. in diam. Mycelium forming a loose network of threads which branch irregularly, 7μ in diameter.

Capitate hyphopodia alternate or irregular, not crowded, about 35μ apart, head cell ovoid or pyriform, often very angular and irregular, 24 x17μ, the basal cell 14μ long or less. Mucronate hyphopodia very irregular in arrangement, bottle-shaped, narrow, about 20μ long. Mycelial setae none. Perithecial setae very numerous, larvaeform, curved. Tip obtuse, 51 x 17μ, translucent.

Perithecia 220μ, ostiolar region thin. Asci soon evanescent; ascospores 4-septate, brown, very strongly constricted, obtuse, 44-47 x 17μ.

On *Calophyllum calaba* Jacq. Fig. 17.

Mayaguez, June 15, '15, *7059* (type). Mayaguez, June 25, '15, *7489*a. Vega Baja, Nov. 13, *4310*.

The species is remarkable for the very numerous larvaeform appendages, it appearing as though nearly every superficial cell of the perithecium develops into an appendage. The appendages are closely marked with transverse striae which simulate septa. The capitate hyphopodia are also characteristic. It resembles *M. inermis,* but distinguished from it by the smaller spores and more angular hyphopodia.

20. Meliola arecibensis sp. nov.

Colonies hypophyllous, irregular, 1-3 mm. in diam. Mycelium forming a rather close net work of threads which are slightly crooked and branch either opposite or alternate, about 6μ in diameter. Capitate hyphopodia alternate, one per cell, cells about 10-17μ long, head cell ovoid to cuneate or very irregular, 20 x 10μ, the basal cell varying from short to quite long, 20μ. Mucronate hyphopodia abundant, usually opposite, bottle-shaped, narrow, 20μ long. Mycelial setae none. Perithecial appendages larvaeform, few, 4-8, short, about 85μ, 20μ thick, curved to crooked, translucent, darker at tip. Perithecia 200μ, rough, with rounded protuberances, ostiole none. Asci soon evanescent; ascospores 4-septate, dark brown, very strongly constricted, obtuse, 44-51 x 20μ.

On *Acalypha bisetosa* Bert. Fig. 18.

Vega Baja, Feb. 21, '13, *365*a (type). Dos Bocas, below Utuado, Dec. 30, '13, *6547*.

This species collected only once is very striking. Possessing no setae either perithecial or mycelial and having the larvaeform chitinous appendages it falls within a class of but few members. It is also remarkable for the great variation in form and size of both kinds of hyphopodia, a variation far greater than I have seen on any other species. It is clearly seperated from *M. acalyphae* by its chitinous appendages and character of the hyphopodia.

21. Meliola miconieicola sp. nov.

Colonies hypophyllous, irregular, diffuse, 5-20 mm. in diam. Mycelium forming a very loose network of slightly wavy threads with branches mostly opposite, 6μ in diameter.

Capitate hyphopodia small, alternate or irregular, very distant, about 75μ apart, head cell ovoid or pyriform, sometimes slightly irregular, 17 x 14μ, the basal cell 4-10μ long. Mucronate hyphopodia few and scattered, mostly opposite, bottle-shaped, narrow, crooked,

about 17μ long. Mycelial setae none. Perithecial setae few, about 3-10, arising from the base of the perithecium, straight or slightly curved. Tip obtuse, 30-85 x 7μ, dark. Perithecia 135μ, rough with rounded protuberances. Asci soon evanescent; ascospores 4-septate, brown, constricted, obtuse, 35-38 x 11μ.

On *Miconia sintenisii* Cogn. Fig. 19.

El Alto de la Bandera, July 15, '15, *8639* (type).

This Meliola is striking on account of its sparse mycelium with very distant hyphopodia.

22. Meliola tenuissima sp. nov.

Fungus amphigenous, more abundant above, colonies extremely thin, invisible to the naked eye, consisting of a loose network of wavy threads, 7μ in diameter. There is usually a distinct bend at each septum.

Capitate hyphopodia small, alternate, distant, head cell globular, ovoid or pyriform, not angular, 10μ in diam., the basal cell about 3μ long. Mucronate hyphopodia few, alternate or opposite, bottle-shaped, 20μ long. Mycelial setae none. Perithecial setae few, about 3-4, straight or bent, or even uncinate at tip, about 100μ long, 6μ thick. Tip obtuse, sometimes swollen.

Perithecia 170μ, slightly rough. Asci soon evanescent; ascospores 4-septate, brown, not constricted, obtuse, 34-37 x 14-15μ.

On *Gouania lupuloides* (L.) Urb.

Yauco, Oct. 3, '13, *3142* (type). Villa Alba, Jan. 3, '13, *96*.

This species is quite unique in the extreme sparseness of the mycelium.

23. Meliola parathesicola sp. nov.

Colonies hypophyllous, irregularly circular, punctiform, 1-2 mm. in diam. Mycelium brown, forming a very close mat, threads 8μ in diameter, branching irregularly.

Capitate hyphopodia alternate or irregular, very crowded, usually in contact with adjacent hyphopodia, head cell ovoid to nearly globular or slightly angular, 20 x 14μ, the basal cell 3-7μ long. Mucronate hyphopodia few and scattered, alternate or opposite, bottle-shaped, 20 x 7μ. Mycelial setae none. Perithecial setae few, 1-5, arising basally, straight, about 90 x 7μ, tip obtuse, dark throughout.

Perithecia 135-150μ, rough, with rather large conic projections. Asci soon evanescent, ascospores 4-septate, brown, cylindrical to elliptical, slightly constricted, obtuse, 48 x 20μ.

On *Parathesis serrulata* (Sw.) Mez. Fig. 20.

Las Marias, July 10, '15, *8192* (type), *8204*. Maricao, July 19, '15, *8947*, Sept. 20, '13, *3634*. Arecibo-Lares Road, June 21, '15, *7286*.

In colony and general characters it resembles *M. mayapaeicola*, but differs in setae and in shape of capitate hyphopodia.

24. Meliola toruloidea sp. nov.

Colonies amphigenous, more abundant below, circular, 1-4 mm. in diam. Mycelium black, forming rather close network of threads; branches opposite or alternate, 7μ in diameter, slightly wavy.

Capitate hyphopodia alternate, not crowded, one per cell, cells about 20μ long, head cell pyriform, 20 x 14μ, the basal cell very short, 5-6μ. Mucronate hypophodia opposite, bottle-shaped. Mycelial setae none. Perithecial setae few to many, often 30-40 per perithecium, distributed over its surface, strongly uncinate or spirally coiled, about 70μ long, 7-8μ thick, black. Young perithecia not radiate, 170μ, slightly rough, with rounded protuberances. Asci soon evanescent; ascospores 4-septate, light brown, constricted, obtuse, 34 x 16μ.

On *Cassia quinquadrangulata* L. Cl. Rich. Fig. 21.

Jajome Alto, July 17, '15, *8394* (type). Maricao, July 20, '15, *8980*, Jan. 10, '13, *206*. Aibonito, Nov. 5, '13, *4015*, July 16, '15, *8468*.

On *Inga laurina* (Sw.) Willd.

Las Marias, July 7, 10, '15, *8135*.

25. Meliola comocladiae sp. nov.

Colonies amphigenous, more abundant above, punctiform, 1-3 mm. in diam. Mycelium forming a network of threads; branches mostly opposite, 8μ in diameter.

Capitate hyphopodia alternate, not crowded, 17-20μ apart, head cell pyriform, angular and often bent, 20 x 14μ, the basal cell 3-5μ. Mucronate hyphopodia alternate or opposite, bottle-shaped. Mycelial setae none. Perithecial setae few or numerous, straight, usually with the tip uncinate or twisted, 115 x 8μ, dark throughout.

Perithecia 100-150μ, rough with conic protuberances, surrounded by an areola of radiating mycelial threads. Asci soon evanescent; 4-spored, ascospores 4-septate, pale brown, very slightly constricted, cylindrical, obtuse, 41 x 17μ.

On *Comocladia glabra* Spreng. Fig. 22.

Rosario, July 4, '15, *9015* (type). Mayaguez Mesa, June 25, '15, *7484*, June 15, '15, *7056*. Maricao, April 3, '13, *760*.

On *Spondias mombin* L.

Maricao, April 3, '13, *749*.

Perithecium and appendages quite similar to those of *M. tortuosa* but distinct from that species in mycelial characters.

The colonies are usually densely overgrown with parasites which make the characters difficult to determine. The absence of mycelial setae, the presence of the long perithecial setae, the characteristic radiation of mycelium from the base of the perithecium, and the characteristically angular capitate hyphopodia are each distinctive.

26. Meliola tortuosa Wint.

Gaillard, Len Genre Meliola: 67, 1892.

On *Piper umbellatum* L. Fig. 23.

Utuado, Nov. 8, '13, *4414*, *4664*. Indiera Fria, Maricao, Oct. 8, '13, *3379*. Mayaguez, Oct. 31, '13, *3917*, Oct. 2, '13, *3152*. Lares, Nov. 22, '13, *4843*, *442*. Añasco, Oct. 12, '13, *3578*, *3507*, *3508*. Monte Alegrillo, Nov. '13, *4721*. El Gigante, near Adjuntas, July 16, '15, *8560*, *8497*. Florida Adentro, July 1, '15, *7669*, *7667*, *7686*. Jajome Alto, Dec. 3, '13, *5656*, *5692*. Dos Bocas, below Utuado, July 8, '15, *8055*, *8028*, *8063*. Las Marias, July 10, '15, *8146*. Rio Tanama, near Arecibo, July 6, '15, *7883*, *7909*, *7842*, *7916*, *7887*, *7848*. Arecibo-Lares Road, July 7, 15, *7956*, June 2, *7316*. Maricao, July 19, '15, *8843*. Rio Arecibo, July 8, '15, *7777*, *7792*.

On *Piper medium*, Jacq.

Vega Baja, July 2, '15, *7752*. A specimen determined by Earle is also in the Bronx collection.

On *Piper peltatum* L.

Heller, No. *6388*, Dec. 25, 1902, Ponce. The type was on leaves of Piper from Brazil. It has also been reported upon Dickensonia.

This form agrees with the descriptions except that the spores are a little too small, 37μ, while the description calls for 49-54μ. It is almost always present where the host is found, often covering the leaves with its black coating.

27. Meliola chamaecristicola sp. nov.

Colonies epiphyllous, circular, 1-2 mm. in diam. Mycelium black, forming a rather close network, 7μ in diameter.

Capitate hyphopodia small, alternate, not crowded, 1 per cell, cells about 14 to 17μ long, head cell ovoid, 14 x 10μ, the basal cell 3μ long. Mucronate hyphopodia alternate or opposite, bottle-shaped, 14-16 x 6μ. Mycelial setae none. Perithecial setae few, straight or slightly curved, 80 x 4μ. Tip obtuse, dark throughout.

Perithecia 170μ, slightly rough with rounded protuberances. Asci soon evanescent; ascospores 4-septate, brown, slightly constricted, obtuse, 34 x 14μ.

On *Chamaecrista granulata* (Urb.) Britt. Fig. 24.

Mona Island, Dec. 20, '13, *6113* (type).

This differs from all other forms in this section in the extremely thin setae.

28. Meliola rectangularis sp. nov.

Colonies epiphyllous, circular to irregular, 1-10 mm. in diam. Mycelium forming a loose network of threads with opposite branches which usually form right angles at the point of origin, 7μ in diameter.

Capitate hyphopodia alternate, about 25μ apart, cylindrical to ovoid, head cell 17 x 10μ, scarcely thicker than the stalk cell, the basal cell 3-5μ. Mucronate hyphopodia alternate or opposite, conical to narrowly bottle-shaped, the neck narrow, 20 x 6μ. Mycelial setae none. Perithecial setae few, short, 80μ or less, opaque, straight or slightly curved. Tip obtuse.

Perithecia 170μ. Asci soon evanescent; ascospores 4-septate, brown, slightly constricted, obtuse, 38 x 14μ.

On *Coccolobis laurifolia,* Jacq. Fig. 25.

Arecibo-Lares Road, June 21, '15, *7292* (type).

This species is chiefly characterized by its poorly differentiated hyphopodia and the right-angled branching. In the first of these characters it approaches *M. magnoliae* but is quite distinct from that form.

On *Banisteria laurifolia* L.

Jayuya, March 3, '13, *1001.* Maricao, Sept. 20, '13, *4852.* Utuado, Nov. 8, '13, *4392*a, *4384.* Hormigueros, K. 7, June 23, '15, *7358.* Mayaguez Mesa, June 29, '15, *7564.* Martin Peña, Oct. 11, '15, *9298.*

29. Meliola chiococcae, sp. nov.

Colonies epiphyllous, irregular, circular, 1-5 mm. in diam. Mycelium black, forming a loose network, 7μ in diameter, branches mostly opposite and at right angles.

Capitate hyphopodia alternate, not crowded, 1 per cell, cells about 20μ long, head cell irregularly globular, angular, 17μ in diameter, the basal cell 2-6μ long. Mucronate hyphopodia not seen. Mycelial setae none. Perithecial setae few, straight or slightly curved, 120 x 7μ. Tip obtuse, dark throughout.

Perithecia 170μ, slightly rough. Asci soon evanescent; ascospores 4-septate, brown, slightly constricted, obtuse, 37-41 x 14μ.

On *Chiococca alba* (L.) Hitch. Fig. 26.

Vega Baja, July 2, '15, *7743* (type). Hormigueros, June 23, '15, *7325*.

30. Meliola pteridicola sp. nov.

Colonies amphigenous, mainly epipyllous, 1-6 mm. in diam. Mycelium forming a loose network of threads which show a marked tendency to be rectilinear and to branch at right angles, quite dark, septation obscure.

Capitate hyphopodia alternate or irregular, not crowded, about 30μ apart, ovoid or pyriform, 17 x 3μ, apex thickened, the basal cell very short. Mucronate hyphopodia few and scattered or abundant on certain threads, alternate or opposite, small, bottle-shaped, the neck narrow, 16-18μ long x 7μ wide. Mycelial setae none. Perithecial setae few, about 3-10, 90 x 7μ, dark, straight, or slightly curved at tip. Tip obtuse.

Perithecia 170μ, rough, with rounded protuberances of small, 6-10μ, subprominent cells, ostiole none. Asci soon evanescent; ascospores 4-septate, brown, very slightly constricted, obtuse, 35-40 x 4μ.

On *Aneimia adiantifolia* (L.) Sw. Fig. 27.

Rio Tanama, near Arecibo, July 6, *7814* (type). Quebradillas, June 23, *7269*. Dos Bocas, below Utuado, July 8, *8015*.

On *Aneimia* sp. Dos Bocas, below Utuado, Dec. 30, '13, *6594*.

On *Adiantum latifolium* Lam.

Las Marias, July 10, *8182*. Mayaguez, June 24, *7418*.

On *Adiantum* sp. aff. *A. cristatum*.

Mayaguez 3, July 19, *8795*.

On *Adiantum sp.*

Mayaguez, May 1, '13, *1063*.

This species is very abundant, forming dense dark patches upon the leaves and petioles though no signs of injury to the host are evident. The fungus falls within the group characterized by perithecial setae, but no mycelial setae, a group with but few representatives, none of which can be confounded with this. The chief, distinctive character is the parallel coursing of the mycelium. The colonies are usually densely parasitized by Helminthosporium, Podosporium, or Asterina, each giving its characteristic effect to the colony. The occurrence of both Helminthosporium and Podosporium upon this Meliola presents a strong argument as to the parasitic nature of these forms rather than their being a stage in the development of the Meliola itself.

31. Meliola molleriana Wint.

Hedw. 25: 98, 1886.

On *Sida urens* L.

Aguada, Nov. 22, '13, *5090*. Mayaguez, March 9, '13, *483*. San German, Dec. 8, '13, *4114*, June 27, '15, *7508*. Añasco, Oct. 12, '13, *3530*. Yauco, Oct. 3, '13, *3243*. Cataño, Nov. 6, '13, *4184*. St. Ana, Dec. 31, '13, *6693*. Arecibo-Lares Road, June 21, '15, *7310*, *7239*. Dos Bocas, below Utuado, July 8, '15, *8031*, *8079*. Las Marias, July 10, '15, *8209*. Rosario, Aug. 4, '15, *9498*, *9486*. El Miradero, Aug. 4, '15, *9151*.

These specimens have somewhat shorter and thinner perithecial appendages and smaller spores than the description calls for. The fungus is very common, almost always present where the host grows.

On *Varronia* sp.

Las Marias, July 10, '15, *8139*. El Miradero, Aug. 3, '15, *9133*, Aug. 4, '15, *9164*. Mayaguez, June 24, '15, *7412*. El Alto de la Bandera, July 14, '15, *8593*.

32. Meliola cupaniae sp. nov.

Colonies epiphyllous, irregular, 2-10 mm. in diam., confluent, diffuse. Mycelium forming a very loose network of threads, branches mostly opposite, 7μ in diameter.

Capitate hyphopodia alternate, distant, 37-70μ apart, head cell ovate to cuneate, smooth or angled, often truncate, the basal cell 7μ long. Mucronate hyphopodia opposite, bottle-shaped to conic, about 20μ long. Mycelial setae none. Perithecial setae 3-12, straight or curved. Tip obtuse, 140 x 5μ, dark.

Perithecia 110-170μ, rough, with rounded protuberances. Asci soon evanescent; ascospores 4-septate, brown, cylindrical, slightly constricted, obtuse, 37 x 14μ.

On *Cupania americana* L. Fig. 28.

El Miradero, near Mayaguez, Aug. 4, '15, *9143* (type), *9489*, Aug. 11, '15, *9318*. Maricao, July 19, '15, *8948*. Dos Bocas, near Utuado, July 8, '15, *8080*. Quebradillas, Nov. 22, '13, *4979*.

On *Cupania* sp. Quebradillas *4779*.

The distinctive character of this species is the sparse mycelium and distant hyphopodia which are long and narrow.

33. Meliola ocoteae sp. nov.

Colonies hypophyllous, irregular, 5-10 mm. in diam. Mycelium very dark, 6μ thick, crooked, loose, branches opposite or alternate.

Capitate hyphopodia alternate or unilateral, about 50-80μ apart, head cell ovoid or angular, 20 x 14μ, stalk cell 10 x 14μ long. Mucronate hyphopodia scant, bottle-shaped. Mycelial setae none. Perithecial setae numerous, 20μ, straight or slightly curved, rigid, dark, about 85μ long, apex obtuse.

Perithecia 170μ, black. Asci evanescent. Spores 4-septate, dark, constricted, somewhat pointed at ends, 50 x 14μ.

On *Ocotea leucoxylon* (Sw.) Mez.

Jajome Alto, July 17, '15, *8428* (type).

Resembling *M. molleriana* but differing from it in number, length and character of the perithecial hairs and in mycelial characters. Usually densely overgrown with conidial forms.

34. Meliola compacta Earle

Bull. N. Y. Bot. Gard. 3: 306, 1905. Collected by Heller, No. 6217, "on *Crossopetalum pallens.*"

35. Meliola miconiae sp. nov.

Colonies epiphyllous, circular, 2-5 mm. in diam., very sharply limited, black, smooth. Mycelium forming a close network of threads mainly with opposite branches, 7μ in diameter.

Capitate hyphopodia alternate or irregular, not crowded, about 30μ apart, head cell pyriform, irregular and angular, often bent, the basal cell 7-9μ long. Mucronate hyphopodia not seen. Mycelial setae none. Perithecial setae very inconspicuous, few, about 3-10, straight or slightly curved, or coiled, 30-85 x 10μ. Tip obtuse.

Perithecia 170-225μ, slightly rough with conic protuberances. Asci four-spored, soon evanescent; ascospores 4-septate, brown, slightly constricted, obtuse, 44-47 x 17μ.

On *Miconia prasina* (Sw.) P. DC. Fig. 29.

Las Piedras, Aug. 12, '15, *9366* (type). Las Marias, July 10, '15, *8160.*

This species is quite distinct from the two others found in Porto Rico upon Melastomataceae. Its very distinct colony is readily recognizable by the naked eye as a distinct form.

36. Meliola triumfettae sp. nov.

Colonies epiphyllous, punctiform, 1-3 mm. in diam. Mycelium forming a close network of crooked threads which branch irregularly, 6μ in diameter.

Capitate hyphopodia small, alternate or irregular, not crowded,

about 17-50μ apart, head cell globular to pyriform, 14μ in diam., the basal cell short. Mucronate hyphopodia few and scattered, alternate or opposite, bottle-shaped, about 20 x 7μ. Mycelial setae none. Perithecial setae few, about 1-5, somewhat crooked, 70-85 x 6μ, yellow, translucent. Tip obtuse.

Perithecia irregularly globular, 85-140μ in diam., very rough, with conic protuberances, translucent. Asci soon evanescent; ascospores 4-septate, brown, constricted, obtuse, 34-41 x 10-14μ.

On *Triumfetta semitriloba* Jacq.

Utuado, Nov. 8, '15, *4421* (type). Indiera Fria, Oct. 8, '13, *3482*.

On *Hibiscus tiliaceus* L.

Arecibo-Lares Road, June 21, '15, *7249*. Maricao, July 20, '15, *8962*. Dos Bocas, below Utuado, July 8, '15, *8073*.

The specimens on Hibiscus while they show the same characteristic perithecia and hyphopodia, are somewhat differentiated as to the habit of the mycelium, which is less crooked and produces larger colonies than on Triumfetta. Perithecial setae are also decidedly more variable in number, sometimes entirely lacking, at other times numerous.

37. Meliola maricaensis sp. nov.

Colonies hypophyllous, irregular, sparse, 5-15 mm. in diam., confluent. Mycelium forming a very loose network of black threads 7μ in diameter, branching irregular.

Capitate hyphopodia alternate or irregular, distant, about 30-70μ apart, head cell ovoid to pyriform and regular, or subpyriform, angular and quite irregular, 17 x 10μ, the basal cell 5-7μ long. Mucronate hyphopodia alternate or opposite, bottle-shaped, 16-18 x 7μ. Mycelial setae none. Perithecial setae few, about 3-10, straight or slightly curved at tip, 100-150 x 7μ, dark. Tip obtuse.

Perithecia 170μ, rough, with rounded protuberances. Asci soon evanescent; ascospores 4-septate, brown, slightly constricted, obtuse, 48 x 20μ.

On *Ilex nitida* (Vahl) Maxim.

Maricao, Oct. 20, '13, *3679* (type), *3607*, April 4, '13, *824*.

Close to *M. cupaniae* but separable from it by the shape of the capitate hyphopodia.

SECTION D

Spores 4-septate, mycelial and perithecial setae present.

Key to Species of Section D.

Setae broadly uncinate	M. contorta No. 38
Setae not broadly uncinate	
Spores long and narrow, 48-51 x 7-9μ	M. mayaguesianaNo. 39
Spores not long and narrow	
Spores apiculate	M. circinans No. 40
Spores not apiculate	M. cyperi No. 41

38. Meliola contorta sp. nov.

Colonies amphigenous, mainly below, irregularly circular, 1-6 mm. in diam., black. Mycelium forming a moderately loose network of threads with branches usually opposite, 7μ in diameter.

Capitate hyphopodia large, alternate, abundant but not crowded, one to each cell and cells about 35μ long, ovoid or elliptical, head cell 17-10μ, apex obtuse, the basal cell about 7μ long. Mucronate hyphopodia opposite, alternate or scattered, bottle-shaped, the neck narrow. Mycelial setae few, scattered, similar to the perithecial in character. Perithecial setae variously curved or uncinate at the tip, several from the base of each perithecium. About 150μ long, 10μ thick; apex variously marked, slightly tapering, with numerous, sharp, lateral projections, or uncinate with roughenings, or short bifid with the branches cut into small, sharp teeth.

Perithecia 140μ, slightly rough, with rounded protuberances, ostiole none. Asci soon evanescent; ascospores 4-septate, brown, very slightly constricted, obtuse, 34-37 x 10μ.

On *Piper hispidum* Sw. Fig. 30.

Las Marias, July 11, '15, *8225* (type).

This species which is my only collection of Meliola upon the host is very interesting. It belongs in that section of the genus in which few species are found, characterized by both mycelial and perithecial setae. The setae moreover, are unique in being both uncinate and forked and toothed.

39. Meliola mayaguesiana sp. nov.

Colonies amphigenous, mostly hypophyllous, circular, 2-8 mm. in diam. Mycelium black, forming a rather close network, 7μ in diameter, branches irregular, quite crooked, tangled.

Capitate hyphopodia small, alternate, not crowded, 1 per cell, cells about 40μ long, head cell ovoid or truncate, apex often thickened, 17 x 10μ, the basal cell varying from very short to 7μ long. Mucronate hyphopodia few and scattered, narrow, alternate, bottle-shaped, 27 x 7μ. Perithecial setae few, about 3-10, about 100μ long, 7μ thick, black throughout, contorted, usually spirally twisted, sometimes coiled into close knots; tips obtuse. Mycelial setae abundant, straight or slightly curved, very long, about 800μ, 9μ thick, dark throughout, simple.

Perithecia 150μ, rough with conic protuberances. Asci 2-4-spored; ascospores 4-septate, pale brown, very long and narrow, slightly constricted, obtuse, 48-51 x 7-9μ.

On *Palicourea crocea* (Sw.) Roem. Fig. 31.

Lajas, June 17, '15, *7157* (type), June 17, '15, *7196*. Las Marias, July 10, '15, *8138*, *8162*.

On *Palicourea domingensis* (Jacq.) DC.

Piedras, Aug. 12, '15, *9320*.

On *Palicourea riparia*, Benth.

Mayaguez, June 25, '15, *7403*, *7019*.

On *Palicourea* sp.

Mayaguez, Apr. 30, '13, *979*. May 3, '13, *1131*.

This Meliola is remarkable in several ways. Possessing both perithecial and mycelial setae it falls within a class of very few representatives indeed. The ascospores too, are distinctly unique, being much more slender than those of any other Meliola that I have seen.

40. Meliola circinans Earle

Bull. N. Y. Bot. Gard. 3: 308, 1905.

On *Mariscus jamaicensis* (Crantz) Britton.

San Juan, Aug. 15, '15, *9221*, Aug. 9, '15, *9203*. Manati, Nov. 25, '15, *5286*.

The type collection was made by Heller, No. 6384, on *Rynchospora aurea*.

Our specimens clearly agree with the type of Earle especially in the possession of both perithecial and mycelial setae of different lengths. The capitate hyphopodia are quite variable and though the circinate forms do occur I would not attach so much importance to this character as Earle seems to do. The sub-apiculate ascospores, however, are quite distinctive and the thickness of the mycelium and of the setae clearly separates this species from *M. cyperi*.

41. Meliola cyperi Pat.

Gaillard, Le Genre Meliola: 70, 1892.

On *Cyperus* sp.

Mayaguez, Oct. 31, '13, *3946*.

On *Scleria*.

Manati, Nov. 25, '13, *5252*, *5286*.

On *Mariscus jamaicensis* (Crantz) Britton.

San Juan, Aug. 15, '15, *9221*.

This species and *M. circinans* are remarkable in that they have both mycelial and perithecial setae and one is loath to admit that two distinct species showing this very unique character are to be found in Porto Rico, especially upon the same host, and more especially upon the same plant, No. 9221. Still, a study of these two forms bears in the conviction that they are actually distinct, one with apiculate spores, the other obtuse, one with cylindrical, narrow, capitate, hyphopodia, the other with thick angular ones, one with thick setae and mycelium, the other thin.

SECTION E

Spores, 4-septate, mycelial setae simple. No perithecial appendages.

Key to Species of Section E

Spores acute	M. psidii No. 42
Spores not acute	
Setal tips swollen	M. clavulata No. 43
Setal tips not swollen	
Tips often uncinate	M. nigra No. 44
Tips not often uncinate	
Capitate hyphopodia opposite	
Head cell conic	M. praetervisa No. 45
Head cell rounded	M. andirae No. 46
Capitate hyphopodia in part opposite, in part alternate	
Opposite hyphopodia numerous	
Head cell very irregular	M. monensis No. 47
Head cell not very irregular	
Setae 400μ	M. thouiniae No. 48
Setae 600μ	M. didymopanicis No.49
Setae 900μ	M. amomicola No. 50

- Opposite hyphopodia comparatively few
  - Setae 1100μ long — M. myrsinacearum No. 51
  - Setae 600-700μ long — M. pilocarpi No. 52
- Capitate hyphopodia alternate
  - Many of the head cells very irregular or angular
    - Mycelium very crooked
      - Setae sparse — M. stenotaphri No. 53
      - Setae abundant — M. capsicola No. 54
    - Mycelium not very crooked
      - Capitate hyphopodia very distant, 700-100μ — M. paucipes No. 55
      - Capitate hyphopodia less distant
        - Setae obtuse — M. panici No. 56
        - Setae acute
          - Setae brown — M. rudolphiae No. 57
          - Setae black — M. serjaniae No. 58
  - Head cells not strongly angular
    - Setal tips acute
      - Mycelium quite straight
        - Setae not broadly curved
          - Capitate hyphopodia ovate — M. dipholidis No. 59
          - Capitate hyphopodia cylindrical — M. ocoteicola No. 60
        - Setae broadly curved — M. paulliniae No. 61
      - Mycelium more or less crooked
        - Mycelium decidedly crooked
          - Setae 250μ — M. chamaecristae No. 62
          - Setae 150μ — M. earlii No. 63
        - Mycelium slightly crooked
          - Head cells ovate to globular — M. gesneriae No. 64
          - Head cells elliptical — M. jatrophae No. 65
    - Setae tips obtuse
      - Head cell short, nearly globular
        - Capitate hyphopodia 20μ apart — M. mayepeae No. 66
        - Capitate hyphopodia 35μ apart — M. gymnanthicola No. 67

Head cell cylindrical or only very slightly thickened
  Mycelium and hyphopodia not irregular — M. lucumae No. 68
  Mycelium and hyphopodia irregular — M. amiphitricha No. 69
Head cell ovate or elliptical
  Setae very long, 1000μ — M. byrsonimae No. 70
  Setae not so long
    Setae very numerous — M. tabernaemontana No. 71
    Setae less numerous
      Tips dark
        Setae straight — M. ambigua No. 72
        Setae curved — M. paulliniae No. 61
      Tips pale
        Head cell elliptical — M. psychotriae No. 73
        Head cell broader
          Spores small, 35μ — M. mayepeicola No. 74
          Spores large, 60μ — M. clusiae No. 75

M. guareae found under section G., if the rare forked setae be overlooked, might be sought in this section.

The species of this section offer, perhaps, the greatest difficulty of classification of all of the Meliolas because of the very large number of forms which fall within the section and the few characters involved. Chief dependence for specific characterization must be placed upon the setae, mycelium, and hyphopodia, since differences are often wanting in other characters.

42. Meliola psidii Fr.

Linnaea 5: 549, 1830.

On *Psidium guajava* L.

Yauco, Oct. 3, '13, *3120*. San German, Dec. 12, '13, *5841*. Mayaguez, Oct. 31, '13, *3899*, March 9, '13, *493*, *6443*. San Sebastian, Nov. 22, '13, *5202*. Vega Alta, Nov. 13, *4183*. Jajome Alto, Dec. 3, '13, *5642*a, July 17, '15, *8377*. Arecibo-Lares Road, June 21, '15,*7302*. Dos Bocas, below Utuado, July 8, '15, *8033*. Vega Baja, July 2, '15, *7721*. Sabana Llana, Aug. 13, '15, *9377*. Maricao, July 20, '15, *8860*. Utuado, *6563*. Jayuya, *3120*a.

Collected by Heller, No. 4360, near Mayaguez.

The shape of the ascospores is the chief distinguishing character of this species. The form is very common on the guava wherever it grows.

43. Meliola clavulata, Wint.

Hedw. 25: 98, 1886.

On *Ipomoea* sps.

Sabana Llana, Aug. 13, '15, *9368*. Monacillo, Aug. 12, '15, *9342*. Rio Piedras, Nov. 3, '13, *5700*. Trujillo Alto, Aug. 15, '15, *9419*. El Miradero, Aug. 4, '15, *9169*. Vega Alta, Nov. 1, '13, *4088*.

On *Ipomoea cathartica* Poir. Fig. 32.

Rio Arecibo, K. 64.7, July 8, '15, *7837*.

The folowing collections appear to belong to the same species but in every instance the terminal setal cell was broken off.

On *Ipomoea cathartica* Poir.

El Alto de la Bandera, July 15, '15, *8655*, July 16, '15, *8692*. Rio Arecibo, K. 64.5, July 8, '15, *7782*. Vega Baja, July 2, '15, *7729*.

On *Ipomoea batatas* (L.) Lam.

Vega Alta, Nov. 1, '13, *5725*. Rio Tanama, July 7, '15, *7927*, *7926*. Maricao, July 20, '15, *8954*.

On *Ipomoea tiliacea* (W.) Choisy.

Mayaguez, No. *46*.

On *Ipomoea* sps.

Trujillo Alto, Aug. 15, '15, *9432*. Rio Piedras, Aug. 11, '15, *9466*, Aug. 10, '15, *9196*. Mayaguez, Aug. 12, '15, *8098*. San German, Dec. 12, '13, *5850*.

The species was originally described from St. Thomas, Africa, but the Porto Rican specimens agree remarkably with Winter's description, and with a "cotype" specimen (E. Ule, Rio de Janeiro, Brazil 7, 1887), kindly sent to me by H. Sydow.

44. Meliola nigra sp. nov.

Colonies very black, velvety with setae, amphigenous, more abundant above, circular, 1-10 mm. in diam. Mycelium forming a close network of threads, branches mostly opposite and at nearly right angles, 7μ in diameter.

Capitate hyphopodia alternate, not crowded, about 17μ apart, head cell obovoid or pyriform or angular, 14 x 10μ, basal cell short. Mucronate hyphopodia opposite, bottle-shaped, 17μ long. Perithecial setae none. Mycelial setae many, forming a dense covering to the whole of the colony except its extreme edge. About 200-270μ long, 7-9μ thick, dark throughout, curved, often recurved at tip. Tip obtuse.

Perithecia 150-160μ, slightly rough with rounded protuberances. Asci 2-spored; ascospores 4-septate, brown, very slightly constricted, obtuse, 37-41 x 14-17μ.

On *Laguncularia racemosa* (L.) Gaertn.

Guanajibo, June 19, '15, *7197* (type). Joyuda, May 31, '15, *363*.

45. Meliola praetervisa Gaill.

Gaillard, Le Genre Meliola: 78, 1892.

On *Coccolobis pyrifolia* Desf. Fig. 33.

Mayaguez, June 15, '15, *7065*, Feb. 9, *1900*, collected by Heller. Jajome Alto, Dec. 3, '13, *5653*a.

On *Coccolobis sintenisii*, Urb.

Mayaguez, June 15, '15, *7066*.

On *Coccolobis sp.*

Jajome Alto, July 7, '15, 17, *8386*.

On *Cupania americana* L.

Mayaguez, June 23, '15, *7372*.

The form on Cupania has the setae occasionally forked and the capitate hyphopodia are conical rather than cylindrical. This species is quite remarkable for its crowded opposite hyphopodia. These hyphopodia, moreover, are set at very uniform angles owing to the fact that the inner side of the stalk cell is uniformly shorter than the outer side. The specimens on No. 8386 have setae somewhat longer than on other hosts and no forked ones were observed.

46. Meliola andirae Earle

Bull. N. Y. Bot. Gard. 3: 303, 1905.

On *Andira jamaicensis* (W. Wr.) Urb. Fig. 34.

Rio Arecibo K, 64.7, July 8, '15, *7800*. Martin Peña, Aug. 11, '15, *9294*. Yauco, Oct. 3, '13, *3132*, *3247*, *3137*. St. Ana, Dec. 31, '13, *6613*. Maricao, Jan. 10, '13, *204*, Apr. 3, '13, *766*. Dos Bocas, below Utuado, Dec. 30, '13, *6566*. Vega Alta, Nov. 13, '13, *4180*. Mayaguez, May 1, '13, *1078*. Lares, Nov. 22, '13, *4917*. Maricao, July 19, '15, *8901*. Manati, Nov. 25, '13, *5629*, Aug. 1915, *9481*. This species conforms fully with Heller's type specimen No. *6448*, collected at Santurce, Jan. 22, 1903, and is one of the best marked of all the Meliolas.

47. Meliola monensis sp. nov.

Colonies mainly epiphyllous, black, small, 1-2 mm. in diam., punctiform. Mycelium forming a very close network of threads; branches crowded, 7μ in diameter.

Capitate hyphopodia alternate or opposite, crowded, mycelial cells about 20μ long, head cell very irregularly lobed, about 17 x 17μ, the basal cell about 7μ long. Mucronate hyphopodia few, scattered, alter-

nate or opposite, bottle-shaped, the neck narrow, often crooked, 20μ long. Perithecial setae none. Mycelial setae abundant, straight, rigid, black, simple, about 400μ long, 10-14μ thick. Tip obtuse.

Perithecia 250μ, slightly rough with rounded protuberances. Asci 78 x 38μ, soon evanescent; ascospores 4-septate, pale brown, slightly constricted, obtuse, 45-52 x 20-22μ.

On *Amyris elemifera* L. Fig. 35.

Mona Island, Dec. 20-21, '13, *6158* (type), *6150*, *6146*. Guayanilla, July 14, '15, *8547*.

The colonies of this species are characteristic and the capitate hyphopodia distinctive.

48. Meliola thouiniae Earle

Bull. N. Y. Bot. Gard. 3: 308, 1905.

On *Allophylus crassinervis* Rad.

Quebradillas, Aug. 5, '15, *9003*.

On *Thouinia striata* Rad. Fig. 36.

Vega Baja, July 2, '15, *7756*. Rio Arecibo, K. 64.7, July 8, '15, *7773*.

The type was collected on the same host by Heller near Bayamon, Jan. 21, 1903, No. *6435*.

The cylindrical, capitate hypophodia, so crowded as to touch each other, give a unique appearance to the colonies on Allophyllus. Study of the type specimen and my own specimens on Thouinia shows variation in the crowding of the hyphopodia. In some parts of the colony they are densely crowded and opposite; at the edge of the same colony they may be strictly alternate and sparse.

On *Winterana canella* L.

Guayanilla, July 14, '15, *8548*, July 26, '15, *9075*. Mona Island, Dec. 20, '13, *6154*. Ponce, Aug. 7, '15, *9189*.

On *Krugiodendron ferreum* (Vahl) Urb.

Guayauilla, July 14, '15, *8594*. Rio Tanama, near Arecibo, July 6, '15, *7895*. Quebradillas, Aug. 10, '15, *9247*, June 20, '15, *9266*. Coamo, Feb. 6, '13, *814*, Apr. 6, '13, *831*.

49. Meliola didymopanicis P. Henn.

Hedw. 34: 106, 1895.

On *Dendropanax arboreum* (L.) Dec. & Pl.

Rio Arecibo, K. 64.7, July 8, '15, *7775*, Mayaguez Mesa, June 25, '15, *7440*. Florida Adentro, July 1, '15, *7647*.

On *Dendropanax laurifolium* (E. March.) R. C. Schneider.

El Alto de la Bandera, July 14, '15, *8265*.

The species was described from Brazilian specimens on *Didymopanax* sps. My material does not agree exactly with the somewhat meagre description, but does agree fully with a co-type specimen (Glazion, Minas Geraes, Brazil 1893) kindly furnished by Dr. H. Sydow. No perithecial setae are evident, though the mycelial setae are often clustered around the base of the perithecium, which may account for this character in the description. A striking character in my specimens is the capitate hyphopodia, which are usually opposite, with a regular, oval head cell. The chief distinction between this species and *M. araliae* seems to be in the length of the setae. It is possible that *M. didymopanicis* should be reported under that name. *M. araliae* was collected in Porto Rico, by Ule, No. 242 in 1884 on "*Aralia arborea*".

50. Meliola amomicola sp. nov.

Colonies mostly hypophyllous, black, circular to irregular, diffuse, 5-15 mm. in diam. Mycelium rather closely woven, nearly straight, black to pale straw color, branches mostly opposite, 6μ thick.

Capitate hyphopodia mostly opposite, two per cell, cells about 24μ long. Head cell cylindrical, straight or crooked, little or no thicker than the stalk cell, stalk cell 2-4μ long. Mucronate hyphopodia scattered, bottle-shaped, 24 x 6μ. Perithecial setae none. Mycelial setae sparse, scattered, long, 900-1000μ, 10μ thick at base, black throughout, acute.

Perithecia scattered, 180μ in diam. Spores 15 x 17μ, strongly constricted, obtuse.

On *Amomis caryophyllata* (Jacq.) Krug. and Urb. Fig. 37.

Mayaguez Mesa, June 15, '15, *7054* (type). Mayaguez, June 25, '15, *7483*.

51. Meliola myrsinacearum sp. nov.

Colonies amphigenous, more abundant above, irregular, circular, 1-10 mm. in diam., confluent. Mycelium black, forming a close network, 10μ in diam., branches mostly opposite.

Capitate hyphopodia alternate, unilateral or irregular, not crowded, 1 per cell, cells about 34μ long, head cell nearly cylindrical or slightly pyriform, 20 x 14μ, the basal cell 2-4μ long. Mucronate hyphopodia few and scattered, alternate or opposite, bottle-shaped, 24 x 10μ. Perithecial setae none. Mycelial setae few or absent in young colonies, abundant in old colonies, straight or slightly curved, 625+ x 10μ, dark throughout, tip obtuse.

Perithecia 200μ, somewhat rough. Asci soon evanescent; ascospores 4-septate, brown, slightly constricted, obtuse, 51 x 17-20μ.

On *Ardisia guadalupensis* Duc.

Mayaguez Mesa, June 29, '15, *7576* (type), *7057*.

On *Myrsinaceae* indet.

Maricao, July 19, '15, *8905*, Oct. 20, '13, *3681*.

This species is closely related to *M. amphitricha* but distinguished from it by the shape of the capitate hyphopodia.

52. Meliola pilocarpi sp. nov.

Colonies hypophyllous, irregular, 4-15 mm. in diam., black. Mycelium forming a loose network of threads, branches opposite or alternate, 8μ in diameter.

Capitate hyphopodia alternate, rarely opposite, not crowded, one per cell, cells, 20-30μ long, head cell cylindrical or slightly thickened, 20 x 10μ, the basal cell short. Mucronate hyphopodia mostly opposite, bottle-shaped, the neck often curved, 20 x 7μ. Perithecial setae none. Mycelial setae few, scattered, straight, black, 1100μ long, 10μ thick at base, tip acute.

Perithecia 190μ in diam. Asci soon evanescent; ascospores 4-septate, brown, strongly constricted, obtuse, 51-54 x 17-20μ.

On *Pilocarpus racemosus* Vahl.

Mayaguez, June 13, '15, *7080* (type).

53. Meliola stenotaphri sp. nov.

Mycelium crooked or in zig-zag bends about equal in number to the hyphopodia.

Capitate hyphopodia alternate, or for considerable distances unilateral, with distinct stalk of much smaller diameter than the head. Stalk cell 7μ wide, 5-9μ long; head cell spherical or oval, about 20 x 14μ. Mucronate hyphopodia scarce, opposite or alternate, ampulliform, 7 x 14μ. Mycelial setae dark, opaque, about 275μ long, 7μ thick at base, simple and acute or very rarely bifid. Perithecial setae none.

Perithecia small, about 100μ, surface rough with rounded protuberances. Spores oblong, 4-septate, obtuse, slightly constricted, 30-44 x 10-14μ.

On *Stenotaphrum secundatum* (Walt.) Ktze. Fig. 38.

Manati, Nov. 5, '13, *4304* (type). Rio Tanama, near Arecibo, July 7, '15, *7940* July 7, '15, *7852*. Dos Bocas, below Utuado, July 8, '15, *8023*. Arecibo, K. 64.7, July 8, '15, *7810*.

The mycelium is distinctive, rather closely woven and with numerous crooks or zig-zags. The long stalks and rounded heads of the capitate hyphopodia are also sufficient to separate this from other forms.

54. Meliola capsicola sp. nov.

Colonies amphigenous, foliicolous and caulicolous, circular, 1-3 mm.

in diam., black. Mycelium forming a very close network, 7μ in diameter, branches irregular, crooked.

Capitate hyphopodia alternate, not crowded, 1 per cell, cells about 20 to 30μ long, head cell very irregular in shape and size, the basal cell often long. Mucronate hyphopodia few and scattered, bottle-shaped, irregular, 20 x 7μ. Perithecial setae none. Mycelial setae abundant, straight or slightly curved, 265 x 10μ, dark throughout, tip acute.

Perithecia 170μ, slightly rough. Asci soon evanescent; ascospores 4-septate, brown, slightly constricted, obtuse, 41 x 14μ.

On *Capsicum baccatum* L. Fig. 39.

Manati, July 2, '15, *7698*. Dos Bocas, below Utuado, July 8, '15, *8019* (type).

On account of the great variation in the hyphopodia, both in shape and size, the form is noteworthy.

55. Meliola paucipes sp. nov.

Colonies amphigenous, mainly below, irregular, scattered, diffuse, 5-10 mm. in diam. Mycelium forming a very loose network of threads, branching irregularly, 7μ in diam.

Capitate hyphopodia alternate or irregular, distant, 70-100μ apart, ovoid or pyriform, often angular, head cell 17 x 14μ, the basal cell about 4μ long. Mucronate hyphopodia mostly alternate, bottle-shaped. Mycelial setae none. Perithecial setae scattered, very long, 700 x 10μ, straight, simple, tip obtuse.

Perithecia 160μ, slightly rough, ostiole none. Asci evanescent; ascospores 4-septate, brown, very slightly constricted, obtuse, 37 x 14μ.

On *Piper blattarum*, Spreng. Fig. 40.

Mayaguez Mesa, June 25, '15, *7463* (type).

This species, the only collection upon the host, is distinguished from others by its very long mycelial setae on a loose mycelium, with distant hyphopodia.

56. Meliola panici Earle

Muhlenbergia 1: 12, 1901.

On *Panicum glutinosum* Sw.

Maricao, Nov. 18, '13, *4801*, July 19, '15, *8934*, July 20, '15, *8957*. Monte de Oro, near Cayey, Dec. 3, '13, *5560*, *5744*, *5672*, *5746*. Utuado, Nov. 8, '13, *4389*. El Alto de la Bandera, Nov. 8, '13, *4368*, July 16, '15, *8930*, *8680*, *8647*. Ponce, Nov. 8, '13, *4375*. El Gigante, Dec. 15, '13, *5947*. Las Marias, July 10, '15, *8187*.

On *Paspalum schreberianum* (Fl.) Nash.

Maricao, July 19, '15, *8803*.

On *Lasiacis compacta* (Sw.) Hitch.

Utuado, Nov. 8, '13, *4643*, *4663*.

On *Lasiacis divaricata* (L.) Hitch.

Arecibo, Jan. 17, '14, *6810*. Manati, Nov. 5, '13, *4298*. Vega Alta, Nov. 5, '13, *4195*, *4189*. Vega Baja, Nov. 5, '13, *4237*. Nov. 22, Arecibo, by Mrs. A. Chase.

On *Lasiacis swartziana*, Hitch.

Añasco, Oct. 12, '13, *3561*. Las Marias, July 10, '15, *8191*.

On *Oplismenus setarius* (Lam.) Roem. & Schult.

Maricao, July 19, '15, *8776*.

On *Andropogon leucostachyus* H. B. K.

El Alto de la Bandera, July 15, '15, *8671*.

On *Andropogon bicornis* L.

Las Marias, July 10, '15, *8168*. Vega Baja, July 2, '15, *7751*.

On *Olyra latifolia* L.

El Miradero, Aug. 4, '15, *9159*. Mayaguez Mesa, June 25, '15, *7485*, *7486*, June 29, '15, *7587*, June 24, '15, *7390*. Maricao, July 20, '15, *8959*. San German, June 27, '15, *7518*. Arecibo, Jan. 17, '14, *6805*.

On *Chloris petraea* Sw.

Mayaguez, Aug. 1, '15, *7810*.

On *Ichnanthus pallens* (Sw.) Munro.

Maricao, Apr. 3, '13, *829*. Monte de Oro, Dec. 3, '13, *5755*. Mayaguez Mesa, June 25, '15, *7441*, *7485*.

On *Gramineae* indet.

Monte de Oro, Dec. 3, '13, *5659*. Arecibo, Jan. 17, '14, *6796*. Trujillo Alto, Aug. 15, '15, *9441*.

The type was collected by Heller near Santurce, Porto Rico.

The form on *Panicum glutinosum* and Ichnanthus is usually densely parasitized; the setae do not develop typically, nor are the capitate hyphopodia as likely to be angular as when on the other hosts listed.

The mycelium upon *Lasiacis swartziana, L. divaricata, Paspalum schreberianum,* Olyra, Oplismenus, the Andropogons and Ichnanthus is frequently straight for great distances, but this I take to be due to the surface of the host rather than to a specific difference in the fungus.

57. Meliola rudolphiae sp. nov.

Mycelium strictly epiphyllous in circular spots or diffuse, black. Mycelial setae abundant, long, 400μ, black, tapering, septate, acute, simple; mycelium crooked.

Capitate hyphopodia alternate, stalk cell short, 3-6μ, head cell ir-

regular, usually bent to one side, 10 x 17μ. Ampulliform hyphopodia alternate, 7 x 21μ.

Perithecia numerous, clustered, black, 150-170μ, slightly flattened, cup-shaped when dry, rough with low tubercles. Asci 4-spored, 65 x 27μ. Spores 4-septate, dark brown, ends rounded, constriction moderate, 48-51 x 17-20μ.

On *Rudolphia volubilis* Willd. Fig. 41.

Monte Alegrillo, Maricao, Nov. 14, '13, *4791* (type). Maricao, Nov. 18, '13, *4835*. Luquillo Forest, Dec. 2, '13, *5439*. El Alto de la Bandera, July 10, '15, *8698*. Aibonito, July 16, '15, *8467*.

This species resembles *M. montagnei,* differing from it in color, spores, thickness, and density of mycelium.

58. Meliola serjaniae sp. nov.

Colonies hypophyllous, irregular, black, 1-6 mm. in diam. Mycelium forming a loose network of threads which branch irregularly, 6μ in diameter.

Capitate hyphopodia small, alternate or irregular, distant, 40-70μ apart, head cell ovoid or pyriform and much lobed, 17 x 10μ, the basal cell 3-6μ. Mucronate hyphopodia usually more abundant than the capitate hyphopodia, opposite, bottle-shaped to conic, narrow, 24 x 6μ. Perithecial setae none. Mycelial setae abundant, black throughout, straight or slightly curved, 280-800 x 10μ. Tip abruptly acute.

Perithecia 150-190μ, smooth. Asci soon evanescent; ascospores 4-septate, brown, constricted, obtuse, 41 x 17μ.

On *Serjania polyphylla* (L.) Rad. Fig. 42.

Vega Baja, Feb. 22, '13, *425* (type). Florida Adentro, July 1, '15, *7654*. Arecibo-Lares Road, June 21, '15, *7219*. Cataño, Nov. 6, '13, *4181*.

This form is clearly differentiated from *M. parenchymate, M. ambigua,* and *M. thouiniae* previously described on the Sapindaceae, all of which have simple mycelial setae. The chief characters are angular, capitate hyphopodia, long, abruptly pointed setae, and numerous mucronate hyphopodia.

59. Meliola dipholidis sp. nov.

Colonies amphigenous, irregular, circular, 2-5 mm. in diam. Mycelium black, forming a loose network, 7μ in diameter, branches mainly opposite.

Capitate hyphopodia small, alternate or irregular, not crowded, 1 per cell, cells about 27μ long, head cell obovoid to pyriform or globular, often angular or bent, 17 x 10μ, the basal cell 5-7μ long. Mucronate

hyphopodia alternate or opposite, wedge to bottle-shaped, 18 x 7μ. Perithecial setae none. Mycelial setae few, straight or slightly curved, 400 x 7μ, dark throughout, tip acute.

Perithecia 110-150μ, slightly rough with rounded protuberances. Asci 2-spored, soon evanescent; ascospores 4-septate, brown, cylindrical, elliptical, distinctly thicker at the middle than toward the ends, strongly constricted, obtuse, 41-44 x 18μ.

On *Dipholis salicifolia* (L.) A.DC.

Guayanilla, July 14, '15, *8549* (type). Quebradillas, June 20, '15, *7265*.

This species differs from *M. amphitricha* in shape of the capitate hyphopodia and spores and from *M. brasiliensis* in character of spores and setae.

60. Meliola ocoteicola sp. nov.

Colonies amphigenous, irregular, 3-10 mm. in diam., confluent. Mycelium forming a rather loose network of threads, branches mostly opposite, 7μ in diameter.

Capitate hyphopodia alternate, not crowded, about 30μ apart, cylindrical, head cell scarcely thicker than the stalk, apex obtuse, the basal cell very short. Mucronate hyphopodia few and scattered, usually opposite, conical to bottle-shaped, 20 x 6μ. Perithecial setae none. Mycelial setae few, straight or slightly curved, 300-350μ, dark, tip acute.

Perithecia 150μ, ostiole none. Asci soon evanescent; ascospores 4-septate, brown, strongly constricted, obtuse, 40 x 17μ.

On *Ocotea leucoxylon* (Sw.) Mez. Fig. 43.

Mayaguez, June 29, '15, *7560* (type). Monte Alegrillo, near Maricao, Nov. 14, '13, *4762*.

On *Chrysophyllum* sp.

Monte Alegrillo, Nov. 14, '13, *4731* (type), Nov. 18, '13, *4519*.

In characters of the capitate hyphopodia this is similar to *M. magnoliae* but is still clearly distinct from that form.

Nos. 4579 and 4731 on Chrysophyllum present in the hypophyllous colonies a peculiar variation, in that the mycelium is exceedingly crooked and irregular. These represent, perhaps, a distinct species, but on account of the general resemblance of the capitate hyphopodia and the setae to the other form of Chrysophyllum, they are regarded as co-specific with it.

61. Meliola paullíniae sp. nov.

Colonies black, setose, circular, epiphyllous, 3-8 mm. in diam. My-

celium forming a loose network of straight, radiating threads, 8μ thick, branches mostly opposite.

Capitate hyphopodia alternate, often at right angles to mycelium, not crowded, 1 per cell, cells about 34μ long, head cell ovate, 17 x 14μ, stalk cell short. Mucronate hyphopodia usually opposite, bottle-shaped, neck narrow. Perithecial setae none. Mycelial setae abundant, straight, simple, black throughout, rigid, abruptly acute, 275-500 x 8-9μ.

Perithecia 150-160μ. Asci evanescent, spores 37-40 x 14-15μ, 4-septate, constricted, obtuse.

On *Paullinia pinnata* L.

Mayaguez, May 3, '13, *1149* (type), Oct. 31, '13, *3956*, *3914*, *3967*a. Vega Baja, Feb. 22, '13, *376*. El Alto de la Bandera, July 16, '15, *8722*. Rio Arecibo, K. 64.7, July 8, '15, *7787*. Barros, Jan. 2, '13, *55*.

On *Casearia ramiflora* Vahl.

Martin Peña, Aug. 11, '15, *9306*, *9328*. Barceloneta, Aug. 10, '15, *9256*. Manati, July 2, '15, *7688*. Vega Baja, March 1, '13, *512*, July 2, '15, *7745*, Nov. 5, '13, *4262*, March 2, '13, *510*. St. Ana, Dec. 31, '13, *6683*. San German, Dec. 12, '13, *5844*.

On *Casearia sylvestris* Sw.

Mayaguez Mesa, June 29, '15, *7566*, June 14, '15, *7017*, May 1, '13, *1051*, May 4, '13, *1200*. Miradero, Aug. 4, '15, *9136*. Arecibo-Lares Road, June 21, '15, *7285*. San German, Dec. 12, '13, *5837*, *5864*.

On *Casearia arborea* (L. Cl. Rich.) Urb.

Monte de Oro, Dec. 13, '13, *5709*.

On *Casearia aculeata* Jacq.

Lajas, June 17, '15, *7151*.

On *Casearia sp.*

Dos Bocas, below Utuado, Dec. '17, '15, *6071*. Mayaguez, June 15, '15, *7074*, Oct. 31, '13, *3925*. *3920*.

The specimens on Casearia differ somewhat from those on Paullinia, especially in the character of the setae.

On *Mammea americana* L.

Maricao, Sept. 20, '13, *3641*. Las Marias, July 10, '15, *8207*.

On host unknown, Martin Peña, Aug. 11, '15.

The specimens upon Mammea show distinctly longer and more slender setae than those on other hosts and are perhaps specifically distinct.

According to the keys of Gaillard this species would be identified as *M. polytricha*, K. and C., therefore, for purposes of comparison, I am publishing a photograph of the type of *M. polytricha*, fig. 44.

62. Meliola chamaecristae Earle

Bull. N. Y. Bot. Gard. 3: 304, 1905.

Described "on *Chamaecrista glandulosa,*" collected by Heller, No. *6371.*

63. Meliola earlii sp. nov.

Colonies amphigenous, irregular, 1-4 mm. in diam. Mycelium forming a loose network of crooked threads which branch irregularly, often angling at the hyphopodia, about 6μ in diam.

Capitate hyphopodia small, alternate, not crowded, about 25μ apart, ovoid or pyriform, sometimes angular or bent, 8 x 10μ, the basal cell short. Mucronate hyphoodia few, bottle-shaped. Perithecial setae none.

Mycelial setae few or numerous, about 160μ long, straight or slightly curved, opaque, tip acute.

Perithecia 160μ, rough with rounded protuberances, ostiole none. Asci soon evanescent; ascospores 4-septate, brown, somewhat constricted, obtuse, 35-40 x 10μ.

On *Pilea* sp. Fig. 45.

Florida Adentro, July 1, '15, *7685* (type).

On *Pilea parietaria* (L.) Bl.

Rio Arecibo K. 64.7, July 8, '15, *7804.*

On *Pilea nummularifolia* (Sw.) Wedd.

Jajome Alto, Dec. 3, '13, *5640.*

The species is associated with a Meliola determined by Earle as *M. triloba* on *Pilea parietaria,* Heller, No. 558. It is differentiated from *M. leptospora* by spore characters. This Meliola though associated with *M. triloba* is clearly distinct from it in the general habit of the mycelium and especially in the presence of mycelial setae on *M. earlii.*

The species is named in honor of F. S. Earle in recognition of his researches upon Porto Rican fungi.

64. Meliola gesneriae sp. nov.

Colonies hypophyllous, circular, 2-8 mm. in diam. Mycelium black, forming a close network, 7μ in diameter, branches mostly opposite.

Capitate hyphopodia alternate, not crowded, 1 per cell, cells about 24μ long, head cell ovate to globular, 10 x 14μ, the basal cell 4-6μ long. Mucronate hyphopodia alternate or opposite, bottle-shaped. Perithecial setae none. Mycelial setae straight or slightly curved, 400 x 7μ, dark throughout, most abundant around the perithecia. Tip acute.

Perithecia 110μ, smooth. Asci soon evanescent; ascospores 4-septate, brown, very slightly constricted, 41 x 17μ.

On *Gesneria albiflora* (Dcne.) O. Ktz.

Mayaguez Mesa, June 25, '15, *7431* (type), *7465*. Dos Bocas, below Utuado, July 8, '15, *8018*, Dec. 30, '13, *6590*.

On *Cestrum laurifolium* l'Her.

Maricao, Apr. 3, '13, *824*.

On *Cestrum macrophyllum* Vent.

El Alto de la Bandera, July 14, '15, *8301*.

El Gigante, July 16, '15, *8561*.

65. Meliola jatrophae sp. nov.

Colonies epiphyllous, circular to irregular, 1-4 mm. in diam. Mycelium forming a loose network of threads; branches mostly opposite, 7μ in diameter.

Capitate hyphopodia alternate or irregular, forming an acute angle with the mycelium, not crowded, about 27μ apart, head cell ovate, 17 x 7μ, apex obtuse, the basal cell short. Mucronate hyphopodia abundant and crowded on certain threads, opposite, bottle-shaped. Perithecial setae none. Mycelial setae few, except around the base of the perithecia where they are numerous, curved, about 250μ long, dark, tip acute.

Perithecia 130-150μ, slightly rough, with rounded protuberances, Asci soon evanescent; ascospores cylindrical, 4-septate, brown, slightly constricted, obtuse, short, thick, 30 x 17μ.

On *Jatropha hernandifolia* Vent.

Rio Tanama, near Arecibo, July 6, '15, *7873* (type). Dos Bocas, near Utuado, July 8, '15, *7930*.

The most distinctive characters are the short, thick ascospores and the ovate, capitate hyphopodia, all directed forward at an acute angle.

66. Meliola mayepeae sp. nov.

Colonies amphigenous, more commonly epiphyllous, circular, 1-5 mm. in diam. Mycelium black, forming a rather close network, 7μ in diameter, branches opposite, mostly at acute angles.

Capitate hyphopodia small, alternate, not crowded, 1 per cell, cells about 35μ long, head cell obovoid, 10 x 7μ, the basal cell 3μ long. Mucronate hyphopodia not seen. Perithecial setae none. Mycelial setae few to abundant, most plentiful around the perithecia, slightly curved, about 250 x 6μ, dark throughout. Tip simple, obtuse.

Perithecia 170μ, slightly rough. Asci soon evanescent; ascospores 4-septate, brown, very slightly constricted, obtuse, 30-35 x 17μ.

On *Mayepea domingensis* Krug and Urb. Fig. 46.

Mayaguez Mesa, June 25, '15, *7468* (type). El Alto de la Bandera, July 16, '15, *8703*.

This species is distinguished from *M. brasiliensis* by the shape of the capitate hyphopodia and the bases of the setae.

67. Meliola gymnanthicola sp. nov.

Colonies epiphyllous, circular, 2-4 mm. in diam. Mycelium forming a close network, 7μ in diameter, branches mostly opposite and often at right angles.

Capitate hyphopodia alternate, not crowded, 1 per cell, cells about 20μ long, head cell ovoid to nearly cylindrical, 17 x 10μ, the basal cell 2-3μ long. Mucronate hyphopodia alternate or opposite, conical to bottle-shaped, irregular, 16-18 x 7μ. Perithecial setae none. Mycelial setae scattered, slightly crooked, 300 x 7μ. Tip obtuse, dark. Perithecia 190μ, slightly rough. Asci soon evanescent; ascospores 4-septate, brown, very slightly constricted, obtuse, 37 x 17μ.

On *Gymnanthes lucida* Sw.

Guayanilla, July 14, '15, *8596* (type).

68. Meliola lucumae sp. nov.

Colonies amphigenous, much larger below, irregularly circular, 2-10 mm. in diam., diffuse. Mycelium forming a loose network, 7μ in diameter, branches mostly opposite.

Capitate hyphopodia alternate, distant, 1 per cell, cells about 35μ long, head cell cylindrical or tapering slightly at each end, 17 x 7μ, the basal cell 3μ long. Mucronate hyphopodia few, mostly opposite, narrow-conic, about 20 x 4μ. Perithecial setae none. Mycelial setae few slightly curved, 200-800 x 7μ, dark throughout. Tip obtuse.

Perithecia 100-150μ, slightly rough with rounded projections. Asci soon evanescent; ascospores 4-septate, pale brown, slightly contricted, obtuse, 44 x 18μ.

On *Lucuma multiflora* A. DC. Fig. 47.

Las Marias, July 10, '15, *8164* (type).

The distinctive character of the species is the sparse, diffuse, mycelium, with cylindrical, capitate hyphopodia associated with slightly differentiated mucronate hyphopodia.

Guayanilla, July 14, '15, *8596* (type).

69. Meliola amphitrichia Fr.

Elench. Fung. 2: 109, 1828.

Reported by Earle "on leaves of tree." Heller collection, No. 288 near Caguas, 1899.

70. Meliola byrsonimae sp. nov.

Colonies epiphyllous, circular to irregular, 2-5 mm. in diam. Mycelium forming a loose network of threads, 10μ in diam.

Capitate hyphopodia alternate, distant, usually about 120μ apart, cylindrical, 20 x 17μ, often irregular or curved, the basal cell 3-5μ long. Mucronate hyphopodia opposite, bottle-shaped, about 24μ long. Perithecial setae none. Mycelial setae very few, scattered, straight or slightly curved, 1000μ long, dark throughout. Tip obtuse to acute.

Perithecia 150 to 160μ, smooth, subtended when young by an areola of radiate hyphae. Asci soon evanescent; ascospores 4-septate, brown, slightly constricted, obtuse, 54 x 18μ.

On *Byrsonima lucida* (Sw.) L. Cl. Rich.

Guayanilla, July 14, '15, *3541* (type).

This is closely related to *M. amphitricha, M. ambigua and M. corallina,* differing from the last two in spore size; differing from the first, in abundance, length and color of setae, and in character of capitate hyphopodia and mycelium.

71. Meliola tabernaemontanae Speg.

Ann. d. Mus. Nac. de Buenos Aires; 33: 42, 1912.

On *Rauwolfia nitida* Jacq.

Martin Peña, Aug. 11, '15, *9327, 9300.*

On *Tabernaemontana oppositifolia* (Spreng.) Urb.

Mayaguez, June 15, '15, *7073.* Hormigueros, K. 7, June 23, '15, *7352.* Mayaguez Mesa, June 29 ,'15, *7558.*

On *Plumiera krugii* Urb.

Maricao, July, 19, '15, *8818.*

These specimens conform perfectly with type material kindly supplied by Dr. Spegazzini.

The most distinctive characters are the regularly shaped, capitate hyphopodia and the black, truncate setae.

71a. Meliola tabernaemontanae. var. forsteroniae var. nov.

The specimens on Forsteronia agree with the type quite closely, but present constant differences in the setae and capitate hyphopodia as follows: The setae are long, about 700μ, and taper to an acute apex. The capitate hyphopodia are larger and more angular than in the type.

On *Forsteronia corymbosa* (Jacq.) Mey.

Utuado, *4682* (type).

72. Meliola ambigua Pat. and Gaill.

Bull Soc. Myc. de Fr. 4: 104, 1888.

On *Lantana odorata* L.

Quebradillas, June 20, '15, *7268, 7267.*

On *Lantana camara* L.

Dos Bocas, below Utuado, July 8, '15, *8016*, *8025*. Rio Arecibo, K. 64.7, July 8, '15, *7806*.

On *Lantana* sp.

Quebradillas, Nov. 22, '13, *5008*. Dos Bocas, below Utuado, Dec. 17, '13, *6052*, Dec. 17, '30, '13, *6870*.

73. Meliola psychotriae Earle

Bull. N. Y. Bot. Gard. 3: 308, 1905.

On *Erithalis fruticosa* L.

Quebradillas, Aug. 10, '15, *9240*, *9229*. Mona Island, Dec. 20, '13, *6082*, *6138*, *6254*. Guayanilla, July 14, '15, *8599*. Also collected by Heller on this host, Jan. 19, 1900, No. *6430*, and on Psychotria sps., near Ponce, Dec. 9, 1902.

On *Gonzalagunia spicata* (Lam.) G. Maza.

Sabana Llana, Aug. 13, '15, *9371*. Miradero, Aug. 4, '15, *9134*. Mayaguez, June 24, '15, *7388*, July, '15, *7910*, June 14, '15, *7044*, *7046*. Vega Baja, Aug. —, '15, *9271*. Rio Arecibo, K. 64.7, July 8, '15, *7793*. Mayaguez Mesa, June 29, '15, *7592*.

On *Randia aculeata* L.

Quebradillas, June 20, '15, *7301*, Nov. 22, '13, *4985*. Florida Adentro, July 1, '15, *7757*. Hormigueros, June 23, '15, *7351*. Monacillo, Aug. 12, '15, *9353*.

The specimens on this host show slight differentiation in the hyphopodia and setae.

On *Chiococca alba* (L.) Hitch.

Mayaguez Mesa, June 25, '15, *7467*. Rio Tanama, July 6, '15, *7859*. Martin Peña, Aug. 11, '15, *9299*. Hormigueros, June 23, '15, *7325*.

On *Guettarda ovalifolia* Urb.

Maricao, Jan. 10, '12, *234*.

On *Borreria laevis* (Lam.) Griseb.

El Alto de la Bandera, July 14, '15, *8593*, *8598*. Dos Bocas, below Utuado, July 8, '15, *8090*.

On *Borreria ocimoides* DC.

One specimen with no data.

On *Rubiaceae* indet.

Guayanilla, July 14, '15, *8550*, *8546*.

I find this species also on *Exostema caribaceum* (Jacq.) R. and Sch. collected in Santo Domingo by Taylor, No. *483*.

74. Meliola mayepeicola sp. nov.

Colonies epiphyllous, circular, punctiform, 1-2 mm. in diam. My-

celium black, forming a very close network, 9μ in diameter, branches mostly opposite.

Capitate hyphopodia large, alternate, close, 1 per cell, cells about 20μ long, head cell pyriform, 24 x 17μ, the basal 7μ long. Mucronate hyphopodia few, alternate or opposite, bottle-shaped, crooked, narrow, 16-18 x 6μ. Perithecial setae none. Mycelial setae few, straight or slightly curved, 150 x 7μ, dark throughout, tip obtuse.

Perithecia 100-119μ, slightly rough, with conic projections.

Asci soon evanescent; ascospores 4-septate, brown, very slightly constricted, obtuse, 34 x 14μ.

On *Mayepea domingensis* Krug and Urb.

Mayaguez Mesa, June 29, '15, *7556* (type). Maricao, Apr. 3, '13, *822*.

The distinctive characters of this species are close, dense, small colony and thick capitate hyphopodia. The setae are sometimes very scant and may perhaps be entirely wanting. Most leaves which bear this fungus are infested with *M. mayepeae* also, but the two are readily separable by the naked eye.

75. Meliola clusiae sp. nov.

Colonies hypophyllous, irregular, diffuse, 3-5 mm. in diam. Mycelium brown, 8μ thick, nearly straight, branching mostly opposite.

Capitate hyphopodia alternate, 1 per cell, cells about 30μ long. Head cell ovate to elliptical, more rarely cylinder or irregular, 20 x 14μ, stalk cell 2-4μ long. Mucronate hyphopodia scattered, 20 x 7μ, bottle-shaped. Perithecial setae none. Mycelial setae few, 800 x 10μ at base, tips obtuse, brittle, usually broken, mostly clustered around the perithecia.

Perithecia apparently dimidiate, with an areola of radiating hyphae. Spore 61 x 20μ, strongly constricted, obtuse, cylindrical.

On *Clusia minor* L.

El Alto de la Bandera, July 15, *8571*, July 15, '15, *8283* (type).

Section F.

Spores 4-septate, no perithecial setae or appendages, mycelial setae simple, uncinate. There are only two species known in Porto Rico.

Key To Species of Section F.

Capitate hyphopodia crowded	M. guareicola No. 76
Capitate hyphopodia not crowded	M. tecomae No. 77

76. Meliola guareicola sp. nov.

Colonies epiphyllous, circular, punctiform, 1-4 mm. in diam., black. Mycelium dense, forming a close mat of threads which readily separates as a whole from the substratum.

Capitate hyphopodia alternate or irregular, crowded, head cell globular, ovoid or pyriform, 14 x 10μ, the basal cell 2-3μ long. Mucronate hyphopodia alternate or opposite, bottle-shaped, the neck narrow, 16-18 x 7μ. Perithecial setae none. Mycelial setae numerous, forming a dense mat covering the colony to the edge, 200-300μ long, 7μ thick, dark, pale at tip, upper part strongly coiled or twisted. Tip acute.

Perithecia small, 100-500μ, distinctly ostiolate. Asci soon evanescent; ascospores 4-septate, brown, slightly constricted, obtuse, 37 x 10μ. On *Guarea trichilioides* L.

Las Marias, July 10, '15, *8166* (type), July 11, '15, *8245*. Mayaguez Mesa, June 25, '15, *7464*. Adjuntas, Nov. 22, '13, *4971*. Monte de Oro, near Cayey, Dec. 3, '13, *5737*. Dos Bocas, below Utuado, July 8, '15, *8096*.

This species is usually associated with *M. guareae* from which it is readily distinguished by its uncinate hairs.

77. Meliola tecomae sp. nov.

Colonies amphigenous, mainly epiphyllous, circular, 2-5 mm. in diam. Mycelium black, forming a close network of threads, 7μ in diameter, branches mostly opposite.

Capitate hyphopodia alternate, not crowded, 1 per cell, cells about 35μ long, head cell ovoid, 17 x 13μ, the basal cell 6-10μ long. Mucronate hyphopodia opposite, irregularly conic, 16-18 x 6μ, no well differentiated neck. Perithecial setae none. Mycelial setae abundant, broadly curved into a large hook at the end, 170 x 10μ, dark throughout, tip obtuse.

Perithecia 170μ, slightly rough with rounded protuberances. Asci soon evanescent; ascospores 4-septate, brown, very slightly constricted, obtuse, 44 x 17μ.

On *Tecoma pentaphylla* (L.) Juss. Fig. 48.

Martin Peña, Aug. 11, '15, *9332* (type), Mayaguez, June 24, '15, *7396*, *7078*. Las Marias, July 10, '15, *8177*. Maricao, July 20, '15, *8960*. On *Tecoma* sp.

El Miradero, Aug. 4, '15, *9163*. Las Marias, March 22, '13, *3593*. Mayaguez, Oct. 31, '13, *3950*. Maricao, Nov. 18, '13, *4804*. Quebradillas, Nov. 22, '13, *4978*, *4981*. Vega Baja, Nov. 5, '13, *4310*a. Arecibo-Lares Road, Jan. 21, '14, *6790*.

The distinguishing character is the long, broadly curved or hooked,

black, setae. They, in general, resemble those figured by Gaillard for *M. balansae* or *M. intermedia,* but the agreement goes no further. There is a strong superficial resemblance to *M. pazschkeana,* but the two are readily distinguished by their very different mucronate hyphopodia.

A specimen on Tecoma which I have not seen, labelled *M. pazschkeana,* in the Bronx herbarium may possibly belong here.

Section G

Spores 4-septate, no perithecial appendages, mycelial setae both simple and forked.

Key to Species of Section G[1]

Capitate hyphopodia opposite	M. ipomoeae No. 78
Capitate hyphopodia not usually opposite	
Setae very long, 1000μ	M. guareae No. 79
Setae shorter	
Capitate hyphopodia very narrow, scarcely thicker than the stalk cell	M. magnoliae No. 80
Capitate hyphopodia thicker	
Head cell nearly globular	M. bicornis No. 95
Head cell more or less elongated	
Capitate hyphopodia often opposite	M. smilacis No. 81
Capitate hyphopodia alternate	
Head cell regular	M. helleri No. 82
Head cell irregular	
Setae sometimes forked	M. mangiferae No. 83
Setae merely denticulate	M. denticulata No. 84

78. Meliola ipomoeae Earle (Not *M. ipomoeae* Rehm[2])

Muhlenbergia 1: 10, July 1901.

On *Ipomoea cathartica* Poir.

Las Marias, July 10, '15, *8183.* Vega Baja, July 2, '15, *7729.* El Alto de la Bandera, July 16, '15, *8692.*

On *Ipomoea tiliacea* (W.) Choisy.

Añasco, Oct. 12, '13, *3506.* Mayaguez, Oct. 31, '13, *3909.*

On *Ipomoea* sps. Fig. 49.

El Miradero, Aug. 4, '15, *9160.* Dos Bocas, below Utuado, July 8,

[1] *M. stenotaphri* which *very rarely* has bifid setae is to be found in section E.

[2] The use of this specific name by Rehm (Ann. Myc. 12: 171, 1914) is clearly invalidated by the prior use by Earle and *M. ipomoeae* Rehm becomes *M. ipomoeaephile* Rehm, in lit.

'15, *8083*. Dec. 30, '13, *6563*. Rosario, No. *4810*. Maricao, July 19, '15, *8784, 9001*.

The type was collected near Mayaguez by Heller, No. *4358*, in 1900. A specimen from the Bronx Garden, No. *6258*, determined by Earle, shows the capitate hyphopodia to be almost exclusively opposite. Although this character is not mentioned by Earle in his description it appears to me to be the most distinctive feature of the species. The perithecia instead of being "few, 2-4," as described, are very numerous, 20+ per colony. The forward angling of the hyphopodia appears to me to be a variable character.

This fungus frequently grows upon the same leaf with *M. clavulata* which it resembles very closely, with the exception of the setal tips and the arrangement of the capitate hyphopodia.

79. Meliola guareae Speg.

Ann. d. Mus. Nac. de., Buenos Aires, 23: 42, 1912.

On *Guarea trichilioides* L.

Las Marias, July 10, '15, *8166* (type). Dos Bocas, below Utuado, July 8, '15, *8096*. Monte de Oro, Dec. 3, '13, *5737*. Adjuntas, Nov. 22, '13, *4971*. Jajome Alto, Dec. 3, '13, *5691*. Mayaguez Mesa, June 25, '15, *7464*. Usually associated with *M. guareicola* but on the lower side of the leaves.

These specimens differ from the type, which was sent to me by Dr. Spegazzini, in that they have larger hyphopodia, more abundant setae, and in minor colony characters, especially in density of growth. The setae with forked tips are rare and the fact that this character was not mentioned by Spegazzini is not significant.

80. Meliola magnoliae sp. nov.

Colonies hypophyllous, irregular, 3-20 mm. in diam., black. Mycelium forming a very loose network of threads, 7μ in diameter.

Capitate hyphopodia alternate or irregular, distant, about 45μ apart, head cell cylindrical, very little thicker than the stalk cell, straight or somewhat curved, obtuse, the basal cell about 7μ long.

Mucronate hyphopodia opposite or irregular, almost cylindrical to slightly bottle-shaped, 20μ long. Perithecial setae none. Mycelial setae few, about 700μ long, straight or slightly curved, opaque. Tip acute, simple or occasionally forked, with short teeth.

Perithecia 200μ in diam., slightly rough with rounded protuberances, ostiole none. Asci soon evanescent; ascospores 4-septate, dark brown, very strongly constricted, obtuse, 51 x 20μ.

On *Magnolia portoricensis* Bello. Fig. 50.

Monte Alegrillo, near Maricao, Nov. 14, '13, *4738* (type).

This species is remarkable for the slight differentiation of its capitate and mucronate hyphopodia which differ from each other but little and also very much resembles branches, though of determinate growth. This is evidently one of the most primitive forms in the genus.

81. Meliola smilacis sp. nov.

Colonies amphigenous but more abundant above, circular, irregular, 2-4 mm. in diam. Mycelium not crooked, of medium density, branches opposite.

Capitate hyphopodia alternate, opposite or unilateral, head cell cylindrical to globular, 14 x 11μ, stalk cell short, about 4μ. Mucronate hyphododia rare, conical, neck short and tapering, or ampulliform with neck longer. Mycelial setae abundant, about 500μ high, tapering, 10μ thick at base, apex obtuse, rarely bifid, pale, base opaque.

Perithecial setae or appendages none. Perithecia about 200μ in diam. Ostiole a mere thinning of the apical region. Asci soon evanescent, short type. Spores 4-septate, but slightly constricted, ends obtuse, 15 x 17μ.

On *Smilax coriacea* Spreng.

Manati, Nov. 25, '13, *5261* (type).

On *Smilax* sp. indet.

Jajome Alto, July 17, '15, *8429*.

The two hosts appear to be quite different but it is possible that the latter specimen is a form of *S. coriacea*.

This Meliola belongs to the group of *M. amphitricha* from which it is distinguished by its ostiole, which is however, very difficult of observation, by the sometimes forked tips of the mycelial setae and by the capitate hyphopodia.

82. Meliola helleri Earle

Bull. N. Y. Bot. Gard. 3: 307, 1905.

The type is on an "unknown woody plant perhaps belonging to the Myrtaceae", Heller No. 6251, 3 miles west of Ponce, Dec. 9, 1902.

The setae in the cotype specimen which I examined were more frequently simple than forked as called for in the description.

On *Eugenia stahlii* (Kiaer.) K. and Urb.

Luquillo Forest, Dec. 4, '13, *5343*. El Alto de la Bandera, July 15, '15, *8665*. Jajome Alto, July 17, '15, *8436*.

The specimens are much overgrown by parasites. Setae were seen upon one specimen, but all were simple.

On *Eugenia monticola* (Sw.) P. DC.

Manati, Nov. 5, '13, *4285*.

On *Myrcia deflexa* (Poir) P.

El Alto de la Bandera, July 14, '15, *8268, 8268, 8672*.

This collection is heavily overgrown by parasites and the determination is therefore not fully reliable. The typical setae were not seen but the character of the mycelium and capitate hyphopodia were those of *M. helleri*.

On *Myrcia splendens* (Sw.) P. DC.

Jajome Alto, Dec. 3, '13, *5646*.

83. Meliola mangiferae Earle

Bull. N. Y. Bot. Gard. 3: 307, 1905.

On *Mangifera indica* L.

Mayaguez, Aug. 5, '15, *9478*, Jan. 8, '14, *6723*, June 16, '15, *7109*. Vega Baja, Feb. 23, '13, *440*. Manati, Nov. 5, '13, *4300*. Luquillo Forest, Dec. 2, '13, *5558, 5428*. El Gigante, near Adjuntas, Dec. 15, '13, *6016*. Collected also by Heller, No. *6393*, near Rio Piedras, Jan. 9, 1903.

In many cases the colonies, particularly epiphyllous colonies, lack the usual velvety appearance, have few setae, a loose mycelium instead of the dense mycelium, and lack the numerous hairs that characterize the large black hypophyllous blotches. The forking of the setae seems to be the exception rather than the rule.

84. Meliola denticulata Wint.

Gaillard, Le Genre Meliola: 98, 1892.

On *Roystonea borinquena* Cook.

Arecibo-Lares Road, June 21, '15, *7279*.

Section H

Spores 4-septate, no perithecial appendages, mycelial setae forked.

Key to Species of Section H

Apical branches strongly divergent, well-developed	
Primary branches at nearly right angles	
Primary branches long, 15+μ	
Secondary branches well developed	M. cucurbitacearum No. 85
Secondary branches merely toothed	M. furcata No. 86
Primary branches short, 4-10μ	M. hessii No. 87
Primary branches not at right angles	

Primary branches short, 18μ	M. piperis No. 88
Primary branches longer	
Capitate hyphopodia mostly opposite	
Secondary and tertiary branches well developed	M. quadrispina No. 89
Tertiary branches often not developed	M. philodendri No. 90
Capitate hyphopodia alternate	M. merrillii No. 91
Apical branches merely teeth or not strongly divergent	
Apical teeth crowded, forming a crest	M. gaillardiana No. 92
Apical teeth not crowded to form a crest	
Setae very dark	
Setae about 400μ long, hyphopodia largely opposite	M. dieffenbachiae No. 93
Setae about 300μ long	M. bidentata No. 94
Setae translucent	M. bicornis No. 95

85. Meliola cucurbitacearum sp. nov.

Colonies epiphyllous, circular, 1-3 mm. in diam. On leaves and stems. Mycelium black, forming a rather close network, 7μ in diameter, branches mostly alternate.

Capitate hyphopodia alternate, not crowded, 1 per cell, cells about 17 to 24μ long, head cell ovoid, lobed, 17 x 14μ, the basal cell 7μ long. Mucronate hyphopodia alternate or opposite, bottle-shaped, 20 x 5μ, neck narrow and crooked. Perithecial setae none. Mycelial setae abundant in the older parts of the colony, 190 x 9μ, dark throughout. Tip once or twice dichotomous, branches standing at nearly right angles to the main axis, primary branches 15-35μ, secondary about the same, apices acute. Perithecia 120μ, rough with rounded protuberances. Asci soon evanescent; ascospores 4-septate, brown, slightly constricted, obtuse, 41 x 14μ. On leaves and stems of an unknown Cucurb, probably Cayaponia.

El Alto de la Bandera, July 16, '15, *8732* (type). Fig. 51.

The species is readily recognized by its characteristic, once or twice dichotomous setae and its lobed capitate hyphopodia.

86. Meliola furcata Lev.

Ann. Sc. Nat. 266, 1846.

On *Coccothrinax alta* (Cook) Becc.

Dos Bocas, below Utuado, Dec. 17, '13, *6060*.

On *Acrista monticola* Cook.

El Alto de la Bandera, *8303 a*. Luquillo Forest, Dec. 4, '13, *5400*.

On *Thrinax ponceana* Cook.
Guayanilla, July 14, '15, *8590*, *8017*, July 26, '15, *9074*.
On *Thrinax praeceps* Cook.
Dos Bocas, below Utuado, July 8, '15, *8017*.
On *Macrodiscus lactiflorus* (Vahl.) Bur.[1]
Coamo, Apr. 6, '13, *850 a*.

87. Meliola hessii sp. nov.

Colonies epiphyllous, irregular, orbicular, 2-3 mm. in diam. Centers denuded when old. Mycelium straight, forming a close network of threads, branches mostly opposite, 7μ in diameter.

Capitate hyphopodia opposite, crowded, about 17μ apart, head cell pyriform, 7 x 10μ, the basal cell 3μ long. Mucronate hyphopodia opposite, bottle-shaped. Perithecial setae none. Mycelial setae erect, rigid, not very numerous, uniformly about 190μ high, 8μ thick. Tip divided dichotomously, once, twice or thrice, into short branches which stand out nearly at right angles to the main stalk. Setal branches about 15μ long.

Perithecia 150μ, minutely rough. Asci soon evanescent, 4-spored; ascospores 4-septate, brown, slightly constricted, obtuse, 41 x 14μ.
On *Paullinia pinnata* L. Fig. 52.

Sabana Llana, Aug. 13, '15, *9367* (type). Mayaguez, May 4, '13, *1207*b.

Named in honor of Mr. W. E. Hess who collected largely in Porto Rico.

The species is remarkable for its straight, rigid setae of characteristic branching. Its characters are so marked that it is separated readily by the naked eye from the other species on Paullinia.

88. Meliola piperis Earle

Muhlenbergia 1: July 1901, 12.
On *Piper adunctum* L.

Dos Bocas, below Utuado, July 7, '15, *7964*. Las Marias, July 10,

[1]The determinations of the Meliolas on Palms were all made by Mr. W. E. Pickler, who has made a special study of the variability of the setal tips of *M. furcata*.

'15, *8603*. Maricao, April 3, '13, *758*. Monte de Oro, near Cayey, Dec. 3, '13, *5678*.

The type was collected by Heller on *P. adunctum* near Mayaguez, Jan. 1900, No. 4359 b.

89. Meliola quadrispina Rac.

Parasit. Algen. u. Pilze, Javas, III, 33, 1900.

Meliola quadrifurcata Rehm. Leaflets of Philippine Bot. 6: 2194, 1914.

On *Ipomoea cathartica* Poir. Fig. 53.

Las Marias, July 10, '15, *8163*.

In general aspect of the colony and in the shape of the hyphopodia there is a striking similarity among the three species above recorded on the Convolvulaceae, which may point to a close relationship between them. This very beautiful species differs from all others that I have seen in its delicately forked setae, which are indeed the striking characters of the colony. Both types of hyphopodia are strictly opposite though this character is not mentioned in the original description.

90. Meliola philodendri sp. nov.

Colonies chiefly epiphyllous, circular, black, 1-5 mm. in diam., velvety. Mycelium coarse, 8μ, straight, branches opposite at uniform angles, setigerous close to the margin of the colony.

Capitate hyphopodia mostly opposite, about 20-30μ apart, stalk cell short, 3μ, head cell oval, not angular, 10 x 14μ. Mucronate hyphopodia scarce, ampulliform, alternate or opposite, often crowded, mycelial setae long, 230-300μ, black, at base about 9μ thick, dichotomous, forking three or more times, ultimate branches acute, branches about 120μ long.

Perithecia about 185μ in diam. Spores cylindrical, obtuse, 4-septate, only slightly constricted, 48-54 x 15-20μ. Spores sometimes narrower and much constricted, becoming moniliform in appearance.

On *Philodendron krebsii* Schott. Fig. 54.

Arecibo-Lares Road, June 21, '15, *7225* (type). Jayuya, March 2, '13, *377*, Mch. 1, '13, *437*. Ponce, Nov. 8, '13, *4346*. Jajome Alto, July 17, '15, *8424*. Maricao, July 20, '15, *8994*. El Alto de la Bandera, July 16, '15, *8712*.

The long, branching, dichotomous setae, together with the opposite hyphopodia distinguish this species. The species is a conspicuous one and is of common occurrence in Porto Rico wherever the host is found.

91. Meliola merrillii Syd.

Phil. Jour. Sc. 8 C 6: 479, 1913.

On *Cissus sicyoides* L.

San German, Dec. 12, '13, *5846*, Nov. 8, '13, *5789*, *5788*. Lares, Nov. 22, '13, *4841*. Utuado, Nov. 8, '13, *4418*, *4398*. Villa Alba, Jan. 3, '12, *101*. El Gigante, near Adjuntas, Dec. 15, '13, *5819*. Dos Bocas, below Utuado, Dec. 17, '13, *6063*, July 8, '15, *8101*, July 7, '15, *7968*. Añasco, Oct. 12, '13, *3565*. Aguada, Nov. 22, '13, *5102*. Yauco, Oct. 3, '13, *3145*, *3143*. Mayaguez, Oct. 31, '13, *3948*, *3910*. Rio Tanama, July 6, '15, *7913*. Manati, July 2, '15, *7690*.

The type is on Cissus leaves collected in Luzon by Merrill. A cotype specimen was kindly sent to me by Doctor Merrill, also by Dr. H. Sydow, and comparison clearly verifies the determination, though there are certain minor differences. In particular, the mycelium in the Porto Rican specimens is much more dense and luxuriant.

92. Meliola gaillardiana sp. nov.

Colonies epiphyllous, small, circular, 1-2 mm. in diam., black; mycelium irregular, crooked, forming a very close, dense network of threads about 9μ thick, cells about 14μ long.

Capitate hyphopodia small, alternate or irregular, crowded, about 7-17μ apart, ovoid, pyriform or curved, 10μ in diam., the basal cell 5-6μ long. Mucronate hyphopodia few and scattered, alternate or opposite, bottle-shaped, the neck narrow. Mycelial setae abundant, straight, rigid, 220μ long, 10μ thick, opaque; at tip bearing a crest, about 17-34μ, of short, acute spines; sometimes forking below this crest. Perithecial setae none.

Perithecia 170μ in diam., slightly rough with rounded protuberances of small, 6μ, subprominent cells, ostiole none. Asci soon evanescent; ascospores 4-septate, brown, very slightly constricted, obtuse, terminal cells longer than the others, 3 x 14μ.

On *Piper aduncum* L. Fig. 55.

Rio Arecibo, July 8, '15, *7794* (type), *7796*. Dos Bocas, below Utuado, July 8, '15, *8044*, Dec. 30, '13, *6802*. Las Marias, July 11, '15, *8223*.

The crests at the apices of the mycelial setae are very distinctive. They seem to be due to a very close, dichotomous branching. The form is most nearly related to *M. piperis* but is separated from that species by the setal tips and the density of mycelium. It differs much from *M. pululahuensis* in its mycelial tips. The difference from *M. patouillardi* is less, still the form appears to be distinct from both.

Named in honor of A. Gaillard in recognition of his extensive studies of the genus Meliola.

93. Meliola dieffenbachiae sp. nov.

Colonies amphigenous with a tendency to be more numerous above but larger below, 1-5 mm. in diam., black, velvety.

Mycelium branches usually opposite at uniform angles forming a rather dense mat. Capitate hyphopodia alternate or opposite, oblong, spherical or curved, basal cell 4μ long, head cell 10-14μ. Mucronate hyphopodia few, alternate or opposite. Mycelial setae rigid, black, straight, about 400μ long, short branched or merely toothed apex. Teeth of varying number and size. Perithecial setae or appendages none. Asci soon evanescent, 2-4-spored. Spores cylindrical, 40 x 14μ, 4-septate, ends obtuse, slightly constricted at the septa, end cells rather larger than the others.

Perithecia grouped in center of colony, numerous, 140-170μ in diam. On *Dieffenbachia sequine* (Jacq.) Schott. Fig. 56.

Las Marias, July 10, '15, *8148* (type), *8210*. Maricao, Oct. 18, '13, *3889*, July 19, '15, *8851*. Cataño, July 2, '15, *7707*. Lajas, June 17, '15, *7155*. Monte de Oro, near Cayey, Dec. 3, '13, *5666*, *5731*. Dos Bocas, below Utuado, July 8, '15, *8074*, *8077*. Mayaguez, June 24, '15, *7420*.

This differs strikingly from *M. philodendri* in the branching of its setae. It resembles *M. fuscidula* but differs from it in the character of the setae.

94. Meliola bidentata Cke.

Grev. 11: 37, 1882.

On *Tecoma pentaphylla* (L.) Juss.

Guanajibo, June 19, '15, *7202*, *9002*. Hormigueros, K. 7, June 23, '15, *7347*.

On *Tabebuia haemantha* (B.) Gris.

Monte Alegrillo, *4716*.

On unknown dicot, St. Ana, July 1, '15, *7621*, *7633*.

The above named specimens were compared with and agree with a specimen obtained from the Kew Gardens. (Ravenel Fung. Amer. Exs.—No. 330,) there labeled "*M. furcata,* Lev." but also labeled in Cooke's writing "not furcata Lev. but bidentata Cke. M.C.C."

95. Meliola bicornis Wint.

Hedw. 26: 99, 1886.

On *Meibomia axillaris* (Sw.) O. Ktz. Fig. 57.

Florida Adentro, July 1, '15, *7653*. Las Marias, July 10, '15, *8179*. Mayaguez, June 24, '15, *7395*. Rio Arecibo, K. 64.7, July 8, '15, *7791*. Rio Tanama, July 6, '15, *7838*.

On *Meibomia adscendens* (Sw.) Kuntz.

El Alto de la Bandera, July 15, '15, *8531*, *8648*.

On *Meibomia supina* (Sw.) Britt.

Cataño, Dec. 3, '13, *4532*. Martin Peña, Aug. 11, '15, *9309*. Maricao, July 19, '15, *8793*, July 20, '15, *8975*. Vega Baja, July 2, '15, *7750*. Mayaguez, July 3, '15, *8094*. Florida Adentro, July 15, '15, *7666*. Rio Tanama, July 6, '15, *7854*. Dos Bocas, below Utuado, July 8, '15, *8022*. El Gigante, near Adjuntas, Dec. 15, '13, *5820*. Indiera Fria, Oct. 8, '13, *3370*.

On *Dalbergia monetaria* L. fil.

Mayaguez Mesa, June 25, '15, *7476*. Arecibo-Lares Road, June 21, '15, *7243*. Maricao, Sept. 20, '13, *3658*.

On *Dalbergia* sps.

Mayaguez Mesa, June 29, '15, *7577*. Rosario, Apr. 3, '13, *711*, July 4, '15, *9016*.

On *Bradburya virginiana* O. Ktz.

Arecibo-Lares Road, June 21, '15, *7242*. Manati, July 2, '15, *7694*. Dos Bocas, below Utuado, July 8, '15, *8043*. Vega Baja, July 2, '15, *7749*. Quebradillas, Nov. 22, '13, *5036*.

On *Mimosa ceratonia* L.

Maricao, July 20, '15, *8899*, *8868*. Rio Arecibo, K. 64.7, July 8, '15, *7770*. Vega Baja, July 2, '15, *7744*. Aibonito, Nov. 3, '13, *4020*.

On *Lonchocarpus glaucifolius* Urb.

Quebradillas, June 20, '15, *7264*.

On *Erythrina micropteryx* Poepp.

El Miradero, Aug. 11, '15, *9166*.

On *Teramnus uncinatus* (L.) Sw.

Maricao, 3503, Jan. 10, '12, *228*. Añasco, Oct. 12, '13, *3583*, *3537*. Yauco, Oct. 3, '13, *3136*.

The form on Teramnus, Nos. 6554, 3583, 3503, is much branched at the apices.

On *Dolicholos reticulatus* Millsp.

Florida Adentro, July 1, '15, *7682*, *7675*. Vega Baja, Nov. 5, '13, *4263*. Lares, Nov. 22, '13, *4933*. Quebradillas, Nov. 22, '13, *4982*. Barceloneta, Aug. 10, '15, *9259*. Rio Tanama, Aug. 6, '15, *7875*.

On an unknown Legume by Heller, *6259*.

This series of specimens on the various hosts shows considerable variation, particularly as to setal apices. The mycelium and the capitate hyphopodia, however, are quite characteristic and I am therefore

inclined to include all of these forms, growing as they do upon members of one family, in one single species, recognizing as varieties such as show well-marked and constant difference. These differences are usually in the setae, which on some hosts are almost invariably simple, on others slightly toothed, and on still others much toothed and contorted.

The species as manifest on some of its hosts clearly agrees with *M. bicornis* Wint of Rabenhorst's Fungi Europaei, No. 3545, collected on an unknown legume in Brazil, May 1885; with an authentic specimen kindly loaned from the Kew Gardens; with a specimen of the Heller collection determined by Earle and with a cotype specimen kindly sent to me by Dr. H. Sydow. It does not, however, conform to the description of this species as given by Gaillard, or the original description of Winter, in that the capitate hyphopodia are not often opposite, as they describe, and as Gaillard figures them, nor are the setae deeply bifid as he describes and figures. Since the original description was by Winter and the Brazilian specimen was published by Winter, and our specimen is clearly co-specific with the Brazilian specimen, it seems best to regard the present series as *M. bicornis.*

On Meibomia, the tips are either acute and simple, or bifid or toothed. Some collections are uniformly simple, others uniformly toothed, yet the species appears to be identical. The collections on *M. adscendens* and *M. axillaris* are rarely forked, while those on *M. supina* are rarely undivided. One collection on *M. axillaris,* No. *7838,* however showed a remarkable variant, with much and very irregularly forked apices. The form on Erythrina has few setae and these sometimes contorted at the tip. The specimens on Bradburya show the capitate hyphopodia somewhat more angular, with simple and unusally bent setae.

95a. M. BICORNIS VAR. CALOPOGONII var. nov.

On *Calopogonium orthocarpum* Urb.

Dos Bocas, below Utuado, July 8, '15, *8060,* Dec. 16, '13, *6035.*

Mayaguez, Oct. 31, '13, *3492,* Apr. 10, '13, *372.* Aguada, Nov. 22, '13, *5087.*

The form on Calopogonium shows perhaps greater differentiation than any of the other forms. The setae are more rigid, more uniformly fine toothed and the capitate hyphopodia are a trifle larger than on other hosts.

95b. M. BICORNIS VAR. GALACTIAE var. nov.

On *Galactia dubia* P. DC.

Rio Tanama, July 6, '15, *7856* (type).

The form on Galactia is well differentiated with large, capitate hyphopodia and usually with divided setae.

Meliola sp. indet. Mayaguez, May 1, '13, No. 1067 on a legume said by Percy Wilson to be "possibly a narrow leaved form of *Clitoria rubiginosa* Juss."

This collection consisting of a few leaves I have not named because of the scanty material. It is a 4-septate form with no mycelial setae, but with obtuse perithecial appendages which are curved, 27-51 x 7μ, Perithecia 125-172μ in diameter. Mycelium quite typical in the manner in which the threads anastomose. Capitate hyphopodia alternate, head cell nearly globular. Mucronate hyphopodia opposite or alternate, neck long, narrow. Spores 4-septate, 41 x 17μ, obtuse.

M. cookenana, Speg. Specimens on Lippia, Stachytarpheta and Lantana, bearing this name are in the New York Garden collections. The determination on Lantana is evidently erroneous. The other specimens have not been examined.

HOST LIST

Arranged by Families

Polypodiaceae	
Adiantum latifolium	M. pteridicola
Adiantum sp.	M. pteridicola
Schizaeaceae	
Aneimia adiantifolia	M. pteridicola
Aneimia sp.	M. pteridicola
Gramineae	M. panici
Andropogon bicornis	M. panici
Andropogon leucostachyus	M. panici
Paspalum schreberianum	M. panici
Paspalum glutinosum	M. panici
Panicum glutinosum	M. panici
Lasiacis swartziana	M. panici
Lasiacis compacta	M. panici
Lasiacis divaricata	M. panici
Ichnanthus pallens	M. panici
Oplismenus setarius	M. panici
Olyra latifolia	M .panici
Stenotaphrum secundatum	M. stenotaphri
Chloris petraea	M. panici

Six other species have been reported upon Graminae as follows: M. bambusae, M. herculeus, M. arundinis, M. amphitricha, M. furcata, M. substenospora.

Cyperaceae	
Mariscus jamaicensis	M. cyperi
Mariscus jamaicensis	M. circinans
Rhynchospora aurea	M. circinans
Cyperus sp.	M. cyperi
Scleria sp.	M. cyperi

Those previously reported upon the Cyperaceae are: M. circinans, M. intricata, M. amphitricha, M. argentina, M. uleana, M. cyperi-uleana, and M. cyperi-italica.

Palmae	
Macrodiscus lactiflorus	M. furcata
Acrista monticola	M. furcata
Thrinax ponceana	M. furcata
Thrinax praeceps	M. furcata
Coccothrinax alta	M. furcata

Roystonea borinquena	M. denticulata

Previously reported on the Palmae: M. iquitosensis, M. manaosensis, M. palmicola, M. amphitricha, M. contigua, M. furcata, M. hyalospora.

Araceae

Philodendron krebsii	M. philodendri
Dieffenbachia seguine	M. dieffenbachiae

Liliaceae

Smilax coriacea	M. smilacis

Three other species are reported on the Liliaceae, viz., M. hyalospora, M. subdentata, M. dracaenicola.

Piperaceae

Piper medium	M. tortuosa
Piper adunctum	M. glabroides, M. piperis, and M. gaillardiana
Piper peltatum	M. tortuosa
Piper umbellatum	M. tortuosa
Piper hispidum	M. contorta
Piper blattarum	M. paucipes

The species previously known upon Piper are: M. stenospora, M. asterinoides, M. patouillardi, M. pululahuensis, M. furcata, M. tortuosa, M. piperis, and M. glabra.

Myricaceae

Myrica cerifera	M. manca

Urticaceae

Pilea parietaria	M. earlii and M. triloba
Pilea nummularifolia	M. earlii
Pilea sp.	M. earlii

M. thomasiana has also been reported upon the Urticaceae.

Polygonaceae

Coccolobis pyrifolia	M. praetervisa
Coccolobis sentenisii	M. praetervisa
Coccolobis laurifolia	M. rectangularis
Coccolobis sps.	M. praetervisa

Magnoliaceae

Magnolia portoricensis	M. magnoliae

M. amphitricha and M. piptochaeta have previously been reported upon this family.

Anonaceae

Anona montana	M. longipoda

M. uvariae has been reported upon this family.

Lauraceae

Persea gratissima	M. perseae

Ocotea leucoxylon	M. ocoteae and M. ocoteicola
Nectandra patens	M. glabroides

The following species have heretofore been reported upon the Lauraceae: M. calva, M. ziz-zag, M. praetervisa, M. martiniana, M. penicillata, M. anomala, M. manca, M. amphitricha, M. acutiseta.

Rosaceae

Rubus sp.	M. puiggarii

Leguminosae

Inga laurina	M. toruloidea
Mimosa ceratonia	M. bicornis
Lonchocarpus glaucifolius	M. bicornis
Cassia quinquadrangulata	M. toruloidea
Clitoria rubiginosa (?)	M. sp. ind.
Meibomia axillaris	M. bicornis
Meibomia adscendens	M. bicornis
Meibomia supina	M. bicornis
Dalbergia monetaria	M. bicornis
Dalbergia sps.	M. bicornis
Andira jamaicensis	M. andirae
Bradburya virginiana	M. bicornis
Erythrina micropteryx	M. bicornis
Teramnus uncinatus	M. bicornis
Rudolphia volubilis	M. rudolphiae
Calopogonium orthocarpum	M. bicornis var. calopogonii
Galactia dubia	M. bicornis var. galactiae
Dolicholus reticulatus	M. bicornis
Chamaecrista granulata	M. chamaecristicola
Chamaecrista "glandulosa"	M. chamaecristae

The following species of Meliola have been reported upon the Leguminosae: M. desmodii, M. ludibunda, M. malacotricha, M. bicornis, M. juruana, M. chamaecristae, M. denticulata, M. harioti, M. pellucida, M. zollingeri, M. andirae, M. gleditschiae, M. musae, M. pazschkeana, M. pseudoanastomosans, M. subtorulosa, M. tamarindi.

Rutaceae

Pilocarpus racemosus	M. pilocarpi
Amyris elemifera	M. monensis

In addition to the species mentioned above, the following have been reported upon the Rutuceae: M. obesa, M. evodiae, M. obesula, M. tenella, M. microtheca, M. butleri, M. amphitricha, M. patens, M. ludibunda.

Simarubaceae

Simaruba tulae	M. glabroides

Meliaceae

Guarea trichilioides	M. guareae and M. guareicola

Other species described upon the Meliaceae are: M. macalpini, M. sandarici, M. opposita, M. parvula.

Malpighiaceae

Banisteria laurifolia	M. rectangularis
Byrsonima lucida	M. byrsonimae

Two other species have been reported upon the Malpighiaceae, namely, M. stuhlmanniana and M. crenata.

Euphorbiaceae

Drypetes sps.	M. glabra
Acalypha bisetosa	M. arecibensis
Jatropha hernandifolia	M. jatrophae
Gymnanthes lucida	M. gymnanthicola

Other forms reported upon the Euphorbiaceae are: M. malacotricha, M. patella, M. verrucosa, M. acalyphae, M. manihoticola, M. cornucaprae.

Anacardiaccae

Mangifera indica	M. mangiferae
Spondias mombin	M. comocladiae
Comocladia glabra	M. comocladiae

The following species have been reported upon the Anacardiaceae: M. rhois, M. guercinopsis, M. malacotricha, M. lanigera, M. irradians, M. mangiferae, M. polytricha, M. anacardii, M. geniculata, M. coronata, M. dracontomeli.

Aquifoliaceae

Ilex nitida	M. maricaensis

Other species reported upon the Aquefoliaccae are: M. ilicis, M. lagersheimii, M. cornuta, M. yerbae.

Celastraceae

Crossopetalum pallens	M. compacta

Species previously reported upon the Celastraceae are: M. falcatiseta and M. gymnosporiae.

Staphylaceae

Turpinia panniculata	M. guignardi

Sapindaceae

Serjania polyphylla	M. serjaniae
Paullinia pinnata	M. hessii and M. paulliniae
Thouinia striata	M. thouiniae

Allophylus crassinervis	M. thouiniae
Cupania americana	M. cupaniae and M. praetervisa
Cupania sps.	M. cupaniae
Hypelate trifoliate	M. glabra

Following is a list of the species previously reported upon the Sapindaceae: M. wrightii, M. parenchymata, M. sapindacearum, M. crucifera, M. ambigua, M. thouiniae, M. araneosa, M. bombphlandi.

Rhamnaceae

Krugiodendron ferreum	M. thouineae
Gouania lupuloides	M. tenuissima

Previously reported upon the Rhamnaceae, M. scutiae.

Vitaceae

Cissus sicyoides	M. merrillii

One other species is reported upon the Vitaceae, namely, M. paraensis.

Tiliaceae

Triumfetta semitriloba	M. triumfettae

Malvaceae

Sida urens	M. molleriana
Hibiscus tiliaceus	M. triumfettae

Two species have been reported upon the Malvaceae, viz., M. molleriana and M. sidae.

Ochnaceae

Sauvagesia erecta	M. glabroides

Guttiferae

Calophyllum calaba	M. calophylli
Mammea americana	M. paulliniae
Clusia minor	M. clusiae

Winteranaceae

Winterana canella	M. thouiniae

Flacourtiaceae

Casearia ramiflora	M. paulliniae
Casearia sylvestris	M. paulliniae
Casearia arborea	M. paulliniae
Casearia aculeata	M. paulliniae
Casearia sp.	M. paulliniae

Cambretaceae

Laguncularia racemosa	M. lagunculariae and M. nigra

Only one species had heretofore been reported upon this family.

Myrtaceae

Amomis caryophyllata	M. amomicola
Psidium guajava	M. psidii

Myrcia deflexa	M. helleri
Myrcia splendens	M. helleri
Eugenia stahlii	M. helleri
Eugenia monticola	M. helleri

The following have been recorded upon the Myrtaceae: M. psidii, M. helleri, M. puchella, M. arborescens, M. laxa, M. densa, M. horrida, M. cladotricha, M. clavispora, M. valdivivensis.

Melastomataceae

Miconia laevigata	M. melastomacearum
Miconia racemosa	M. melastomacearum
Miconia sentenisii	M. miconieicola
Miconia prasina	M. miconiae
Clidemia hirta	M. melastomacearum
Clidemia strigillosa	M. melastomacearum

Species other than the above which have been reported upon the Melastomataceae are: M. heudeloti, M. weigettii, M. memecyli, M. affinis.

Araliaceae

Dendropanax arboreum	M. didymopanicis
Dendropanax laurifolium	M. didymopanicis

Other species on the Araliaceae are: M. araliae, M. dichotoma, M. kusanoi, M. heterosetae, M. pectinata, M. leplidae.

Myrsinaceae

Ardisia guadalupensis	M. myrsiniacearum
Parathesis serrulata	M. parathesicola

The following species have been reported upon the Myrsinaceae: M. cladotricha, M. quercinopsis, M. delicatula, M. armata, M. groteana, M. perigrina, M. maesae.

Sapotaceae

Lucuma multiflora	M. lucumae
Dipholis salicifolia	M. dipholidis
Chrysophyllum sp.	M. ocoteicola

M. brasiliensis is the species previously reported on the Sapotaceae.

Oleaceae	M. mayepeae
Mayepea domingensis	M. mayepeicola

M. jasminicola has been reported on this family.

Apocynaceae

Plumiera krugii	M. tabernaemontanae
Tabernaemontana oppositifolia	M. tabernaemontanae
Rauwolfia nitida	M. tabernaemontanae
Forsteronia corymbosa	M. tabernaemontanae var. forsteroniae

Other species previously recorded upon the Apocynaceae are: M. levipoda, M. simillima, M. intermedia, M. willoughbyae, M. clavitispora, M. compositarum, M. membranacea, M. laevigata.

Convolvulaceae

Ipomoea cathartica	M. clavulata, M. ipomoeae, and M. quadrispina
Ipomoea tiliacea	M. clavulata and M. ipomoeae
Ipomoea batatas	M. clavulata
Ipomoea sps.	M. clavulata and M. ipomoeae

Other species recorded for this family are: M. decidua, M. ambigua, M. melacotricha, M. ipomoeaephile, M. merremiae, M. franceville-ana, M. caymanensis, M. hewittiae.

Borraginaceae

Cordia nitida	M. longipoda
Cordia sps.	M. longipoda
Tournefortia hirsutissima	M. longipoda
Varronia sps.	M. molleriana

In addition to the above, M. usteriana has been reported upon the Borraginaceae.

Verbenaceae

Stachytarpheta cayennensis	M. glabroides
Lantana odorata	M. ambigua.
Lantana camara	M. ambigua
Lantana sps.	M. ambigua
Lantana sps.	M. cookeana (?)
Avicennia nitida	M. sepulta

Other species recorded on the Verbenaceae are: M. durantae, M. sakawensis, M. callicarpae, M. clerodendricola, M. amphitricha, M. lippiae, M. coronata, M. vitis, M. lantanae.

Labiatae

Hyptis lantanifolia	M. hyptidicola
Hyptis capitata	M. hyptidicola
Hyptis pectinata	M. hyptidicola
Hyptis sp.	M. hyptidicola

Other species recorded on the Labiateae are: M. anastomosans, M. inermis, M. pelliculosa, M. hyptidis.

Solanaceae

Solanum rugosum	M. glabroides
Solanum persicifolium	M. glabroides
Solanum jamaicense	M. solani
Capsicum baccatum	M. capsicola
Cestrum laurifolium	M. gesneriae
Cestrum macrophyllum	M. gesneriae

Other species on the Solanaceae are: M. winteri, M. plebeja, M. glabra, M. solanicola Gaill., M. acervata, M. solanicola P. Henn.

Bignoniaceae	
Macrodiscus lactiflorus	M. furcata
Tecoma pentaphylla	M. tecomae and M. bidentata
Tecoma sps.	M. tecomae
Tabebuia haemantha	M. bidentata
Schlegelia sps.	M. glabroides var. schlegeliae

Species previously recorded upon the Bignoniaceae are: M. arachnoidea, M. bidentata, M. furcata, M. harioti, M. lanceolato-setosa.

Gesneriaceae	
Gesneria albiflora	M. gesneriae
Acanthaceae	
Hygrophila brasiliensis	M. irregularis
Rubiaceae	
Gonzalagunia spicata	M. psychotriae
Randia aculeata	M. psychotriae
Erithalis fruticosa	M. psychotriae
Chiococca alba	M. chiococcae and M. psychotriae
Guettarda ovalifolia	M. psychotriae
Palicourea crocea	M. mayaguesiana
Palicourea riparia	M. mayaguesiana
Palicourea domingensis	M. mayaguesiana and M. glabra var. psychotriae
Palicourea sps.	M. mayaguesiana and M. glabra var. psychotriae
Borreria laevis	M. psychotriae
Borreria ocimoides	M. psychotriae
Coccocypselum repens	M. glabra var. psychotriae
Psychotria pubescens	M. glabra var. psychotriae
Psychotria grandis	M. glabra var. psychotriae
Psychotria bertiana	M. glabra var. psychotriae
Psychotria sp.	M. glabra var. psychotriae
Rubiaceae indet.	M. psychotriae

Other species on the Rubiaceae are: M. intermedia, M. sandicensis, M. longiseta, M. falcata, M. manca, M. rubicola, M. cryptocarpa, M. glabra, M. palawanensis, M. pencilliformis, M. asterinoides, M. mitchelliae.

Cucurbitaceae	
Cayaponia (?)	M. cucurbitacearum

Three species, none of them with forked setae, have been noted upon the Cucurbitaceae, namely: M. triloba, M. malacotricha, M. aciculosa.

Compositae	
Pseudelephantopus spicatus	M. cyclopoda
Eupatorium odoratum	M. compositarum
Eupatorium portoricense	M. compositarum var. portoricensis

Species previously reported upon the Compositae are: M. sororcula, M. spegazziniana, M. mikaniae, M. compositarum, M. inermia, M. amphitricha, M. tortuosa.

Host unknown	M. bidentata
Host unknown	M. amphitricha
Host unknown	M. tuberculata
Host unknown	M. paulliniae
Host unknown	M. aibonitensis
Host unknown	M. sp. ind.

EXPLANATION OF PLATES

All plates are from photo-micrographs made by Mr. A. G. Eldredge. They were reduced 28% in reproduction. The abbreviations l.p. and h.p. indicate low power and high power with a magnification of approximately 75 and 355 diameters respectively. Scales showing the magnification are given in plate V; the smallest divisions are 10μ wide.

EXPLANATION OF PLATE I

Fig. 1. M. puigiarii: portion of perithecium and larvaeform appendages. h.p. No. 8270.

Fig. 2. M. manca: mycelium, capitate hyphopodia, a germinating spore. h.p. No. 1292 N. A. F.

Fig. 3. M. guignardi: general type of colony, mycelium and capitate hyphopodia. No. 8922. l.p.

Fig. 4. M. glabra: showing type of mycelium and hyphopodia. l.p. Rabenhorst, Fung. Europ. No. 3849.

Fig. 5. M. sepulta: type of colony and mycelium. l.p. Heller's collection. No. 6416.

Fig. 6. M. irregularis: spores showing irregularity in size of cells. h.p. No. 9283 (type).

Fig. 7. M. solani: mycelium showing opposite hyphopodia. h.p. No. 5750 (type).

Fig. 8. M. hyptidicola: a showing perithecia, crooked mycelium, and oval hyphopodia. l.p.
b mycelium and hyphopodia in greater detail. h.p. No. 8526.

Fig. 9. M. cyclopoda: general view showing colony, rough perithecia, and character of mycelium and hyphopodia. l.p. No. 7733 (type).

Fig. 10. M. perseae: irregular, crooked mycelium, mucronate hyphopodia and angular capitate hyphopodia. h.p. No. 8212 (type).

Fig. 11. M. longipoda: mycelium, capitate and mucronate hyphopodia, ascospores and a young perithecium. h.p. No. 9329.

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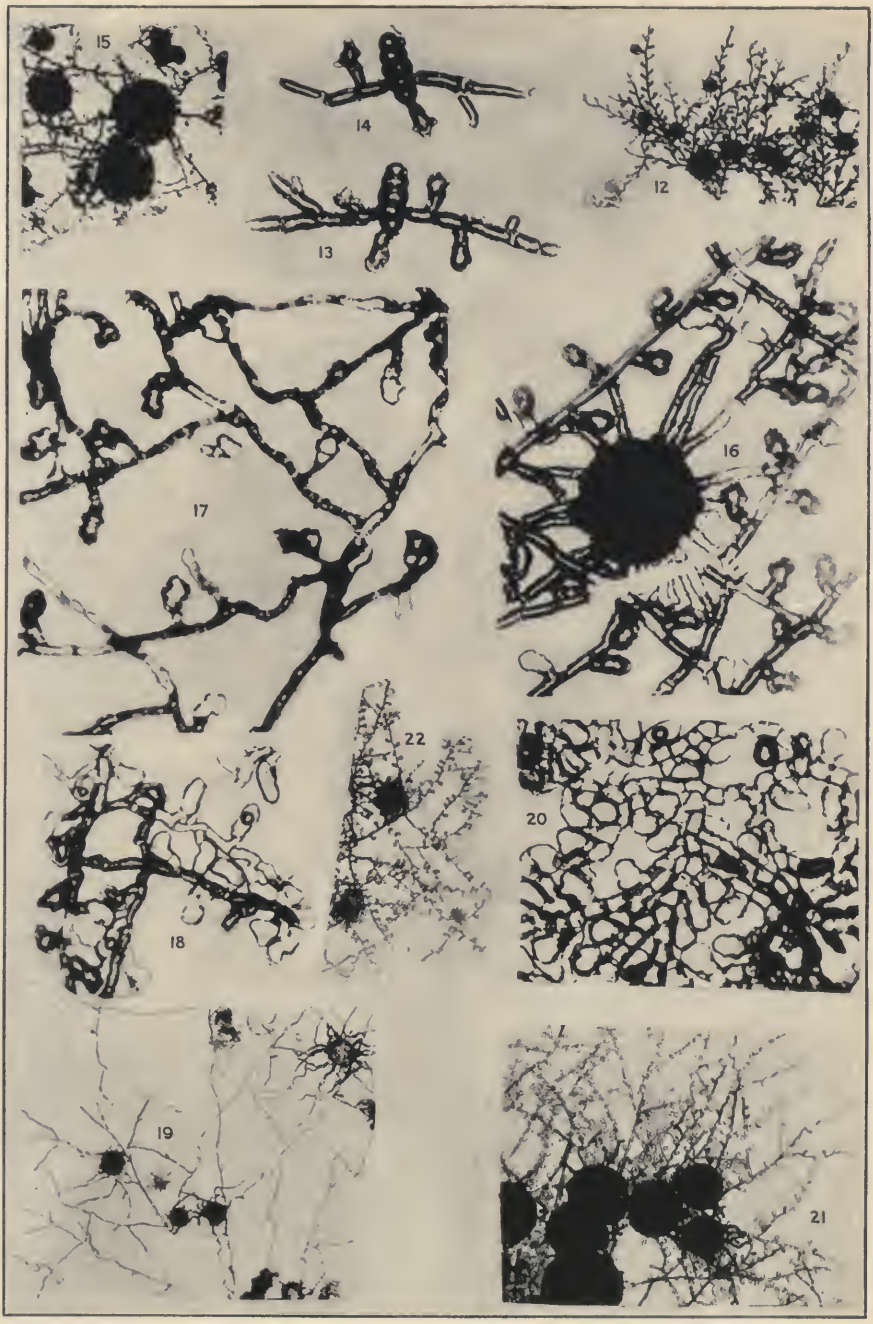
PLATE II

EXPLANATION OF PLATE II

Fig. 12. M. melastomacearum: perithecia, mycelium and hyphopodia. l.p. No. 8956.
Fig. 13. M. glabroides: germinating spore with hyphopodia. h.p. No. 3371 (type).
Fig. 14. M. triloba: spore and young mycelium with typically lobed capitate hyphopodia. h.p. No. 1038.
Fig. 15. M. compositarum: colony showing perithecium with larvaeform appendage, mycelium and hyphopodia. l.p. Heller, No. 6185 (co-type).
Fig. 16. M. compositarum var. portoricensis: showing mycelium and capitate hyphopodia. h.p. No. 7723.
Fig. 17. M. calophylli: irregular mycelium and head cells. h.p. No. 7059 (type).
Fig. 18. M. arecibensis: mycelium and crowded hyphopodia. h.p. No. 365a (type).
Fig. 19. M. miconieicola: loose, scant mycelium with distant hyphopodia. l.p. No. 8639 (type).
Fig. 20. M. parathesicola: capitate hyphopodia very crowded. h.p. No. 7286.
Fig. 21. M. toruloidea: perithecia, young and old, mycelium and hyphopodia. l.p. No. 8394 (type). A few setae are visible on the perithecia.
Fig. 22. M. comocladiae: colony showing character of mycelium and hyphopodia. l.p. No. 9015 (type).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PLAVE III

EXPLANATION OF PLATE III

Fig. 23. M. tortuosa: perithecium and appendages, with tortuose tips. l.p. No. 4714.
Fig. 24. M. chamaecristicola: showing thin setae on perithecia. l.p. No. 6113 (type).
Fig. 25. M. rectangularis: showing right-angle type of branching. h.p. No. 7292 (type).
Fig. 26. M. chiococcae: mycelium, angular hyphopodia, young perithecium with radiating mycelium. h.p. No. 7743 (type).
Fig. 27. M. pteridicola: showing parallel coursing of mycelium. l.p. No. 7814 (type).
Fig. 28. M. cupaniae: showing perithecial setae. l.p. No. 9143 (type).
Fig. 29. M. miconiae: general habit of mycelium. l.p. No. 9366.
Fog. 30. M. contorta: perithecia and crooked perithecial setae. l.p. No. 8225 (type).
Fig. 31. M. mayaguesiana: ascospore, mycelium and capitate hyphopodia. h.p. No. 7157 (type).
Fig. 32. M. clavulata: swollen setal tips. h.p. No. 7837.
Fig. 33. M. praetervisa: spore and mycelium showing characteristic conic capitate hyphopodia. h.p. No. 5653a.

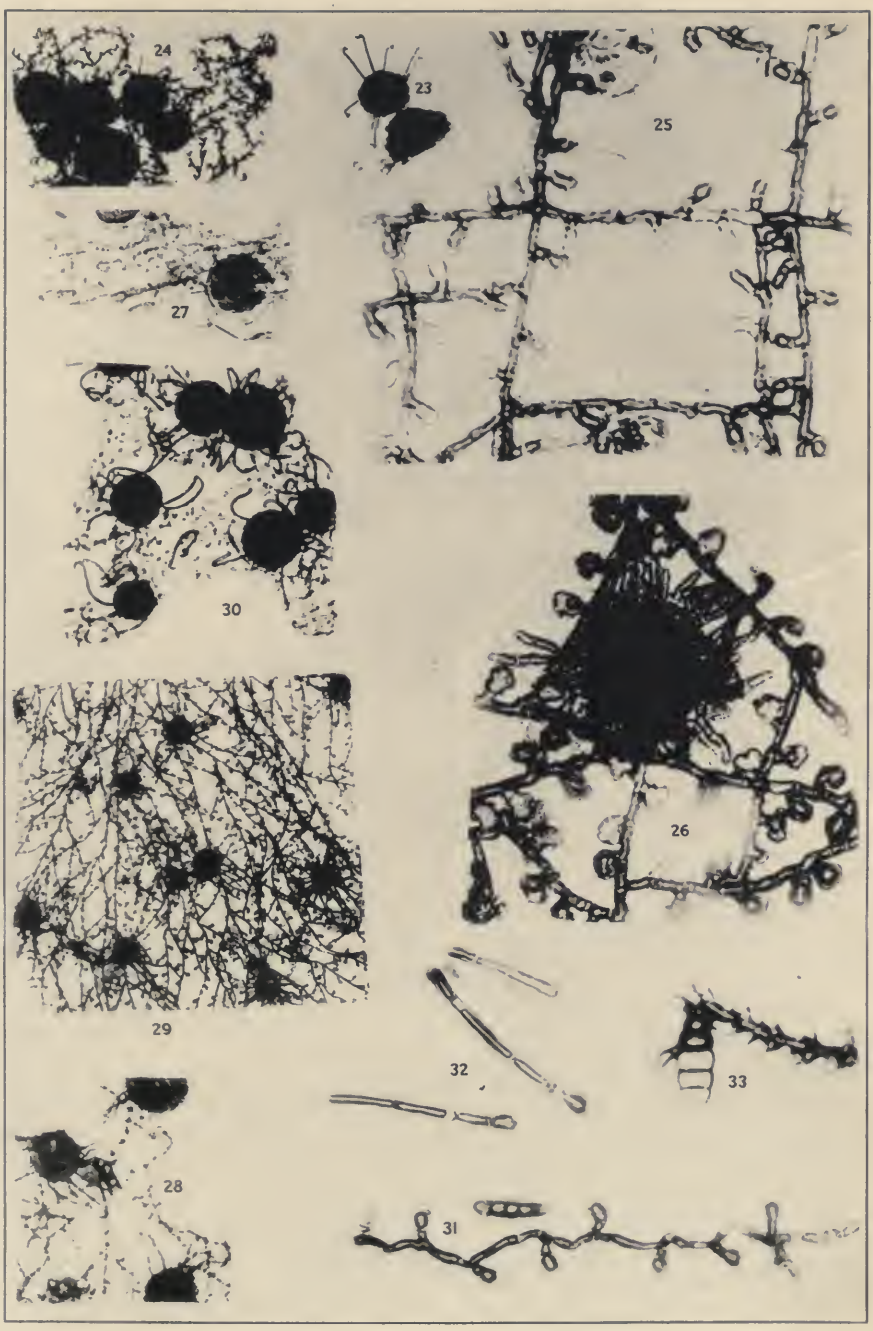
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PLATE IV

EXPLANATION OF PLATE IV

Fig. 34. M. andirae: a spore, mycelium showing characteristic opposite capitate hyphopodia. h.p. Earle (co-type). No. 6448.
Fig. 35. M. monensis: showing typical hyphopodia. h.p. No. 6158 (type).
Fig. 36. M. thouiniae: capitate and mucronate hyphopodia. h.p. Heller, No. 6435 (type).
Fig. 37. M. amomicola: typical opposite hyphopodia. h.p. No. 7054 (type).
Fig. 38. M. stenotaphri: crooked mycelium, long setae. l.p. No. 8023.
Fig. 39. M. capsicola: showing irregular hyphopodia. l.p. No. 8019 (type).
Fig. 40. M. paucipes: distant hyphopodia and long, black setae. l.p. No. 7463 (type).
Fig. 41. M. rudolphiae: mycelium, capitate hyphopodia and a spore. h.p. No. 8698.
Fig. 42. M. serjaniae: alternate capitate and opposite mucronate hyphopodia. h.p. No. 425 (type).
Fig. 43. M. ocoteicola: characteristic capitate hyphopodia. h.p. No. 7560 (type).
Fig. 44. M. polytricha K. & C.: edge of colony showing habit. "No. 1262 on Cunonia capensis. Grahamstown, Cape, ex Kalchbrenner." h.p. (type).

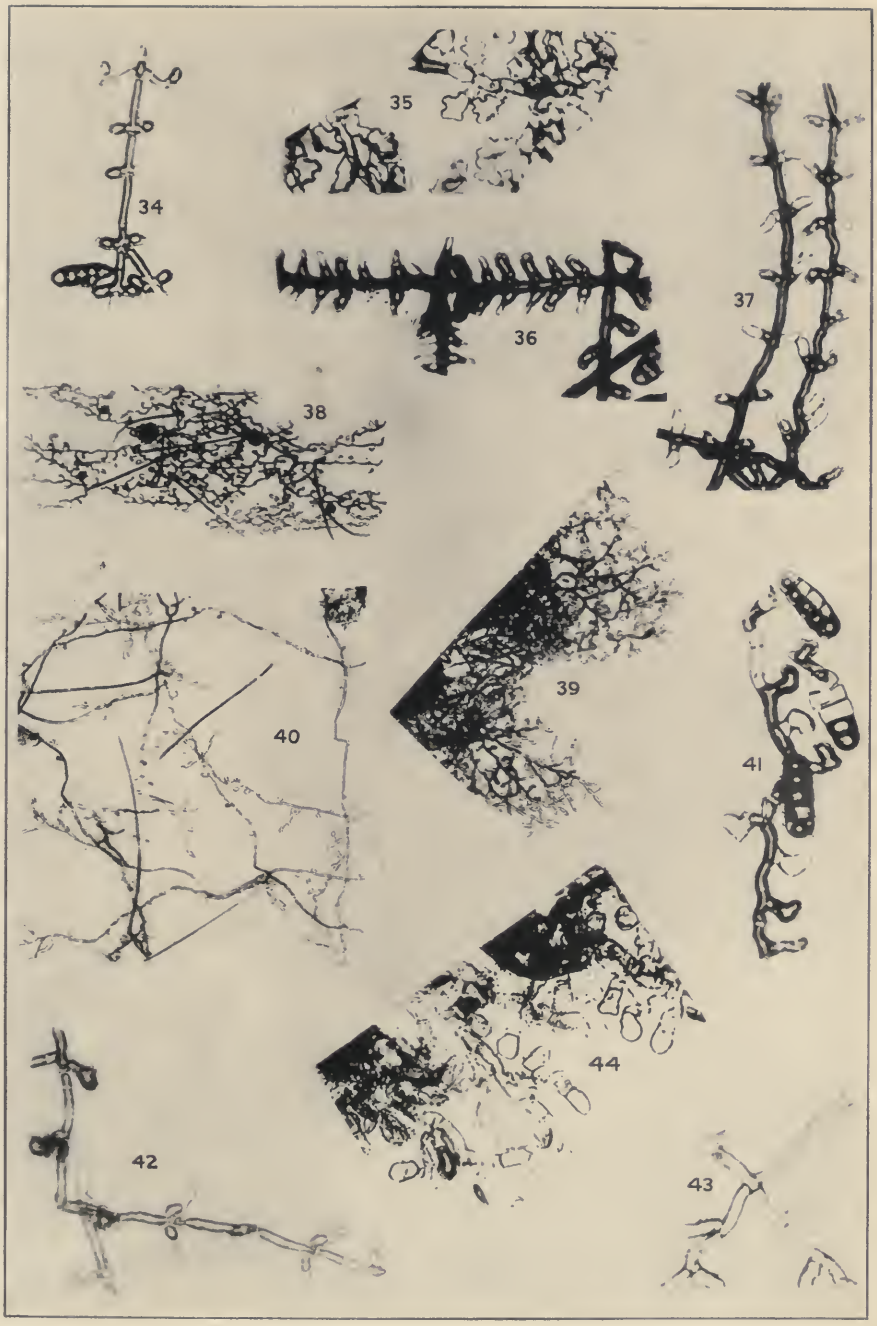
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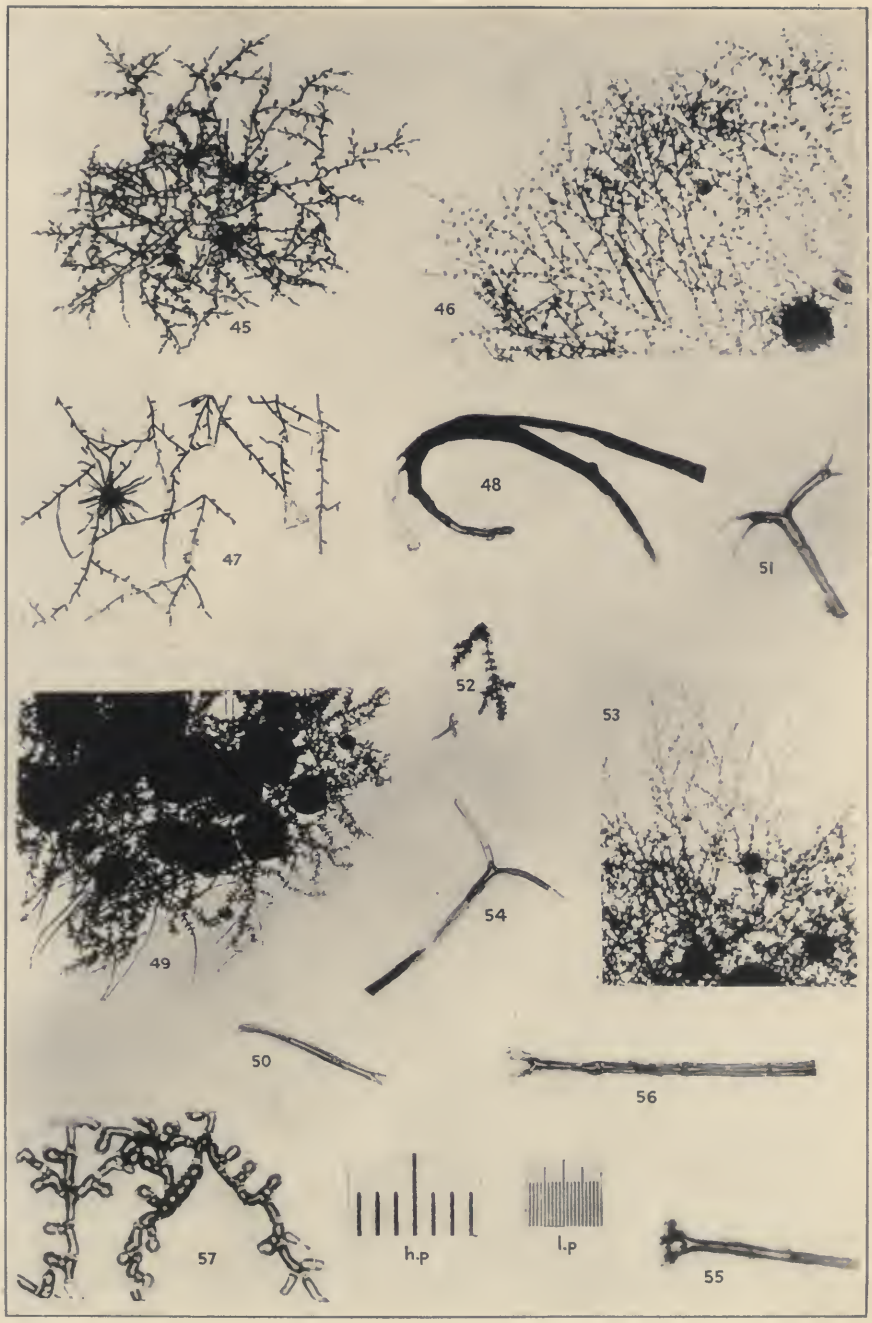
PLATE V

EXPLANATION OF PLATE V

Fig. 45. M. earlii: colony showing mycelial character. l.p. No. 7685 (type).
Fig. 46. M. mayepeae: general character of colony. l.p. No. 7468 (type).
Fig. 47. M. lucumae: mycelium and capitate hyphopodia, young perithecium. l.p. No. 8164 (type).
Fig. 48. M. tecomae: showing curved tips of setae. h.p. No. 9332 (type).
Fig. 49. M. ipomoeae: colony, mycelium, opposite hyphopodia, long setae, perithecia. l.p. No. 6563.
Fig. 50. M. magnoliae: setal tip showing forking. h.p. No. 4738 (type).
Fig. 51. M. cucurbitacearum: showing forking of setal tips. h.p. No. 8732 (type).
Fig. 52. M. hessii: a setum showing character of forking, a bit of mycelium. l.p. No. 9367 (type).
Fig. 53. M. quadrispina: general type of colony. l.p. No. 8163.
Fig. 54. M. philodendri: primary branching of setal tip. h.p. No. 4346.
Fig. 55. M. gaillardiana: crested setum. h.p. No. 7794 (type).
Fig. 56. M. dieffenbachiae: setal tip. h.p. No. 8148 (type).
Fig. 57. M. bicornis, "authentic specimen" from Kew gardens determined by Winter: spore, mycelium and capitate and mucronate hyphopodia. h.p.
Fig. h.p. millimeter scale ruled to 1/10 mm. high power.
Fig. l.p. ditto with low power magnification.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